PREPARED FOR:

MONTGOMERY REGIONAL SOLID WASTE AUTHORITY
555 AUTHORITY DRIVE
P.O. BOX 2130
CHRISTIANSBURG, VIRGINIA 24068

SOLID WASTE MANAGEMENT PLAN

JUNE 2004
REVISED DECEMBER 2004
REVISED MARCH 3, 2010

PREPARED BY:

OLVER, INC
1116 SOUTH MAIN STREET
SUITE 100
BLACKSBURG, VIRGINIA 24060

REVISED BY:

ENGINEERING, INC.
1604 OWNBY LANE
RICHMOND, VIRGINIA 23220
PHONE: 804.355.4520
FAX: 804.355.4282
JEI PROJECT NO. 00716.1000.01 TASK 18
WWW.JOYCEENGINEERING.COM

MONTGOMERY REGIONAL SOLID WASTE AUTHORITY
SOLID WASTE MANAGEMENT PLAN

Table of Contents

SECTION **PAGE**

TABLE OF CONTENTS ..... **i-iii**

LIST OF APPENDICES ..... **iv**

1.0 INTRODUCTION **1**

1.1 SUMMARY 1
1.2 PLAN GOALS 1
1.3 SWMP COVERAGE AREA 2
1.4 TRANSPORTATION NETWORK 3

2.0 PROJECTIONS AND WASTE QUANTITIES **4**

2.1 POPULATION DATA AND PROJECTIONS 4
2.1 COMPOSITION OF SOLID WASTE 6
2.2 SOLID WASTE GENERATION PROJECTIONS AND FLOW PATTERNS 8
2.3 CURRENT MARKET CONDITIONS 8
2.4 WASTE STREAM PROJECTIONS 9
2.4.1 MUNICIPAL SOLID WASTE 9
2.4.2 CONSTRUCTION DEMOLITION DEBRIS 11
2.4.3 RECYCLEABLES 13
2.4.4 SPECIAL WASTES 14

3.0 SOLID WASTE MANAGEMENT SYSTEM **17**

3.1 MUNICIPAL SOLID WASTE MANAGEMENT 17
3.1.1 MRSWA 17
3.1.1.1 MSW TRANSFER 18
3.1.1.2 MSW DISPOSAL 18
3.1.1.3 MSW RECYCLING AND WASTE REDUCTION 19
3.1.1.4 SPECIAL WASTE SERVICES 20
3.1.2 TOWN OF BLACKSBURG 22
3.1.2.1 MSW Collection 24
3.1.2.2 MSW RECYCLING AND WASTE REDUCTION 26
3.1.2.3 SPECIAL WASTE SERVICES 27
3.1.3 TOWN OF CHRISTIANSBURG 27
3.1.3.1 MSW COLLECTION 27

3.1.3.2 MSW Recycling and Waste Reduction 29
3.1.3.3 Special Waste Services 30
3.1.4 MONTGOMERY COUNTY 30
3.1.4.1 MSW Collection 30
3.1.4.2 MSW Recycling and Waste Reduction 31
3.1.4.3 Special Waste Services 31
3.1.4.4 Illegal Dumping 32
3.1.5 VIRGINIA TECH 32
3.1.5.1 MSW Collection 33
3.1.5.2 MSW Recycling and Waste Reduction 34
3.1.5.3 Special Waste Services 35
3.2 Other Waste Streams 36
3.2.1 Construction Demolition and Debris Wastes 36
3.2.2 Industrial Wastes 36
3.2.3 Regulated Medical Wastes 37
3.3 PUBLIC EDUCATION 37
3.4 PUBLIC/PRIVATE PARTNERSHIPS 38

4.0 HIERARCHY 39

4.1 SOURCE REDUCTION 39
4.2 REUSE 39
4.3 RECYCLING 39
4.4 WASTE-TO-ENERGY/INCINERATION 40
4.5 LANDFILL 41

5.0 GOALS AND OBJECTIVES 41

5.1 MRSWA 43
5.2 TOWN OF BLACKSBURG 44
5.3 TOWN OF CHRISTIANSBURG 46
5.4 MONTGOMERY COUNTY 46
5.5 VIRGINIA TECH 47

6.0 PLAN IMPLEMENTATION 49

6.1 MRSWA 49
6.2 TOWN OF BLACKSBURG 50
6.3 TOWN OF CHRISTIANSBURG 50
6.4 MONTGOMERY COUNTY 50
6.5 VIRGINIA TECH 50

7.0 PUBLIC PARTICIPATION 52

7.1 PUBLIC/PRIVATE PARTNERSHIPS 52
7.2 PUBLIC HEARINGS 53
7.3 RESOLUTIONS 53

8.0 SUMMARY 53

LIST OF APPENDICES

APPENDIX I ..... LIST OF STEERING COMMITTEE MEMBERS
APPENDIX II ..... LIST OF SOLID WASTE PERMITS ISSUED IN MONTGOMERY COUNTY
APPENDIX III ..... SOLID WASTE DATA AND PROJECTIONS
APPENDIX IV ..... PUBLIC HEARING NOTICE AND MINUTES
APPENDIX V ..... BOARD RESOLUTIONS

1.0 INTRODUCTION

1.1 SUMMARY

In accordance with 9VAC 20-130-10 *et seq.*, this Montgomery Regional Solid Waste Management Plan (SWMP) is an integrated solid waste hierarchy which includes the following solid waste management alternatives, listed in order of decreasing preference: source reduction, reuse, recycling, resource recovery (methane gas to electricity), incineration, and landfilling. This Plan was developed through the sponsorship of the Montgomery Regional Solid Waste Authority (MRSWA or Authority), which is the designated lead agency for the planning region comprised by Montgomery County (County), the Towns of Blacksburg and Christiansburg, and the Virginia Polytechnic Institute and State University (Virginia Tech). The plan outlines the long-term strategy and goals set by the solid waste planning unit for the planning period from 2004 to 2024.

MRSWA has assumed the lead responsibility for maintaining this Plan in accordance with 9VAC 20-130-10 *et seq*, and in this role, has provided the funding for the consulting engineering services required for Plan revisions. Oversight of Plan revisions is conducted by the Montgomery Regional Solid Waste Management Plan Steering Committee, which is composed of the individuals listed in Appendix I.

1.2 PLAN GOALS

The goals of this SWMP include coordinating the efforts of the four jurisdictions regarding solid waste management and planning. In addition, the plan will demonstrate how the goals and objectives for solid waste management will be met and include a schedule for the implementation of these goals. Foremost in this plan, is the continued search for an effective and environmentally safe alternate means of disposing the regions municipal solid waste.

1.3 SWMP COVERAGE AREA

The coverage area of this SWMP is the region comprised by Montgomery County, the Towns of Blacksburg and Christiansburg, and the Virginia Polytechnic Institute and State University (Virginia Tech). Montgomery County consists of approximately 393 square miles and lies in the area between the Appalachian Plateau and the Blue Ridge Mountains in a region known as the New River Valley. The New River Valley consists of Montgomery, Giles, Pulaski and Floyd Counties and is shown below in Figure 1 along with nearby Roanoke County.

The topography of Montgomery County varies from gently rolling to steep mountainous terrain, with elevations varying from 1,300 to 3,700 feet above sea level. The majority of the County is at an elevation of 2,000 feet with the majority of the residential growth is centered around Blacksburg and Christiansburg.

Blacksburg is home to Virginia Tech. Founded in 1872 as a land-grant college, Virginia Tech is the largest university in Virginia. The university has approximately 30,000 students, is comprised of nine colleges and graduate schools, and offers 65 bachelors degrees and 145 masters and doctoral degree programs. The university's main campus contains 2,600 acres, has over 125 major buildings. Major facilities include: The Inn at Virginia Tech and Skelton Conference Center with 147 guest rooms, Cassell Coliseum which seats 10,000, and Lane Stadium which seats more than 66,000. The university also has a 1,700 acre research farm nearby in Montgomery County. Adjacent to the university is the Corporate Research Center and a regional airport

Christiansburg is the county seat and is the retail center for not only Montgomery County, but also for the New River Valley.

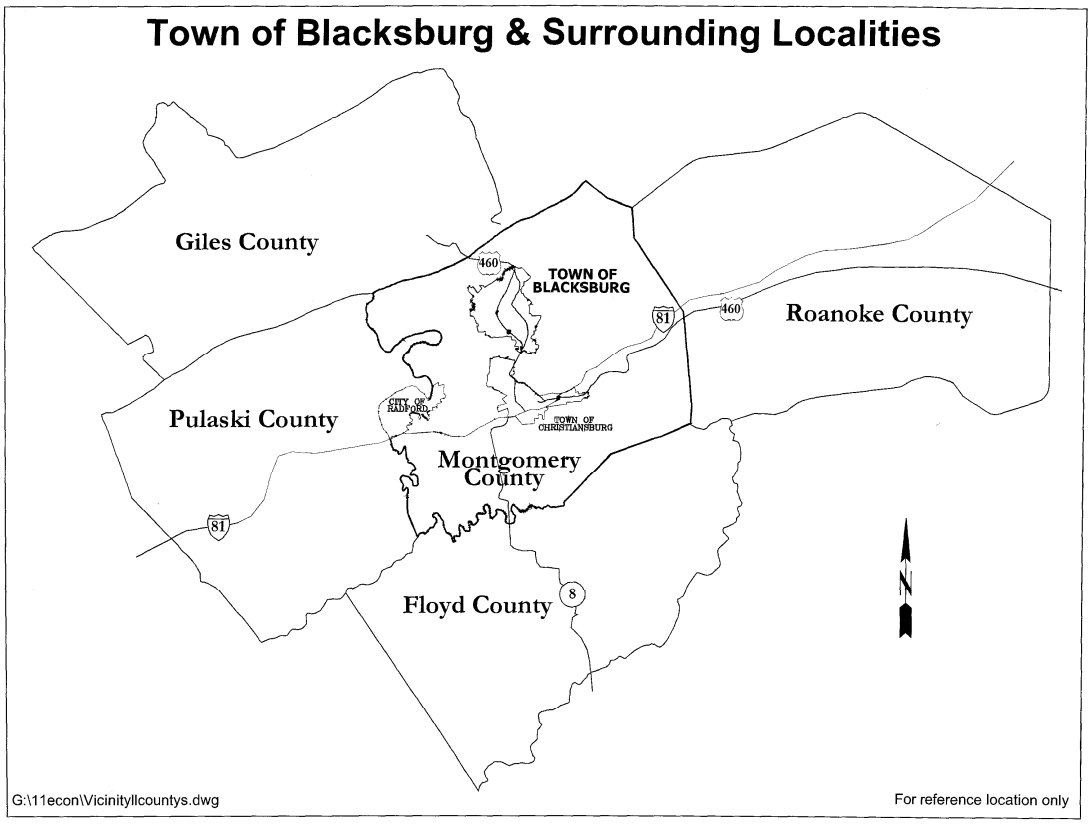

Figure 1. New River Valley and Roanoke County

1.4 TRANSPORTATION NETWORK

There are several major transportation arteries within this planning region. Interstate 81 can be accessed at four locations in the planning region and the Norfolk-Southern Railway maintains two active lines in the planning region. In addition, major highways in the region include: U.S. 460 (with both business and bypass components), U.S. 11, and VA 114. Two other secondary roads which bear significant commuter and cargo transportation roles are Prices Fork Road, west of Blacksburg and VA Route 8 (Riner Road), south of Christiansburg.

2.0 PROJECTIONS AND WASTE QUANTITIES

2.1 POPULATION DATA AND PROJECTIONS

Population data and projections for the planning region were obtained from the U.S. Census Bureau and the Virginia Employment Commission (VEC), respectively. Population data from the U.S Census Bureau for the planning region is provided in Table 1. As indicated, the County's estimated population was 83,629 in 2000, which represents a 13.1% increase since the last official census in 1990.

Table 1. Historical Population Data

Locality	2000	1990	1980	Percent Change 1990-2000	Percent Change 1980-1990
Montgomery County	83,629	73,913	63,516	13.1%	16.4%
Town of Blacksburg	39,573	34,590	30,638	14.4%	16.4%
Town of Christiansburg	16,947	15,004	10,345	13.0%	45.0%
Virginia Tech	N/A	N/A	N/A	N/A	N/A

Population projections, based on data provided by the Virginia Employment Commission (VEC), dated May 2003[1] , are presented for Montgomery County in Table 2. As indicated, the County population is projected to grow at rates of 0.70% to 0.83% from 2004 to 2030. The projected County population in the year 2023 – the last year of the planning period – is projected to be 99,978, an increase of 13,551 persons or 15.7% over the County's 2004 population.

[1] During the 2009 revisions to this SWMP, the current (or 2008) VEC population projections were reviewed and compared to the 2003 population projections shown in Table 2. Based on the comparison, it was determined that the differences between the projections were not significant (i.e. 0.62% and 1.14% deviations in years 2010 and 2020, respectively); therefore, the 2003 population projections were still considered to be valid for use in this SWMP.

Table 2. Montgomery County, VA
Historical Population Data and Projected Population Growth

Year	Population [1]	Blacksburg		Christiansburg [4]	VA Tech [5]	Uninc. County Pop. [6]
		Total [2]	w/o VA Tech [3]			
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2000	83,629	39,573	30,652	16,947	25,783	27,109
2001	84,320	40,238	31,317	17,087	26,244	26,995
2002	85,016	40,914	31,993	17,228	26,713	26,874
2003	85,719	41,602	32,681	17,370	27,191	26,747
2004	86,427	42,301	33,380	17,514	27,677	26,612
2005	87,141	43,012	34,091	17,659	28,172	26,470
2006	87,861	43,735	34,814	17,805	28,676	26,321
2007	88,586	44,470	35,549	17,952	29,189	26,164
2008	89,318	45,217	36,247	18,100	29,711	26,001
2009	90,056	45,977	37,007	18,249	30,242	25,830
2010	90,800	46,750	37,780	18,400	30,783	25,650
2011	91,486	47,035	38,065	18,539	30,783	25,912
2012	92,178	47,322	38,352	18,679	30,783	26,177
2013	92,874	47,610	38,640	18,820	30,783	26,444
2014	93,576	47,901	38,931	18,963	30,783	26,712
2015	94,283	48,193	39,223	19,106	30,783	26,984
2016	94,996	48,487	39,517	19,250	30,783	27,259
2017	95,714	48,782	39,812	19,396	30,783	27,536
2018	96,437	49,080	40,110	19,542	30,783	27,815
2019	97,166	49,379	40,409	19,690	30,783	28,097
2020	97,900	49,680	40,710	19,839	30,783	28,381
2021	98,588	49,974	41,004	19,978	30,783	28,636
2022	99,281	50,270	41,300	20,119	30,783	28,892
2023	99,978	50,567	41,597	20,260	30,783	29,151
2024	100,680	50,867	41,897	20,402	30,783	29,411
2025	101,388	51,168	42,198	20,546	30,783	29,674

Notes:

1 Montgomery County population for the year 2000 published in Census 2000 . Population projections for the years 2010, 2020, and 2030 for Montgomery County made by the Virginia Employment Commission on 05/03. Linear growth assumed for intervening years.

2 Population projections for the years 2010, 2020, and 2030 for the Town of Blacksburg published in Blacksburg 2046 (Appendix A), (November 27, 2001).

3 The on-campus population of Virginia Tech was reported to be 8,921 persons in 2002 and assumed to remain constant through 2007. In 2008 the on-campus population was reported to be 8,970 and assumed to remain constant through the remaining planning years.

4 Population projections for the years 2010, 2020, and 2030 for the Town of Christiansburg made by assuming the same population growth rate as predicted for Montgomery County by the Virginia Employment Commission on 05/03.

5 Population projections for the years 2010, 2020, and 2030 for Virginia Tech published in Blacksburg 2046 (Appendix A), (November 27, 2001).

6 Unincorporated Montgomery County population (Column (7)) was calculated by the Blacksburg and Christiansburg pop. from the total County pop. : [(7) = (2) - (3) - (5)]

2.1 COMPOSITION OF SOLID WASTE

Generally, wastes generated and handled in the planning region consist of municipal solid waste (MSW), construction/demolition/debris (CDD), regulated medical waste (RMW), industrial waste, white goods, and sludges. MSW wastes include residential and commercial waste as well as vegetative and yard waste, sludges, and recyclables (including, but not limited to aluminum cans, mixed paper, old corrugated cardboard (OCC), old newsprint (ONP), magazines/catalogs, glass, steel cans, textiles, plastics, tires, used motor oil, anti-freeze, universal wastes, Freon and abandoned vehicles.) Information is presented in Table 3 for the six major categories of waste generated within this planning region for calendar year 2008.

Table 3. MRSWA 2008 Waste Intake		
Waste Stream	**Quantity Generated (Tons/Year)**	**Percent or Total Waste**
Municipal Solid Waste (MSW) [1]	87,421	71%
Construction/ Demolition/Debris Waste (CDD) [2]	12,851	10%
	(52,162)[3]	N/A
Industrial Waste [4]	19,406	16%
Regulated Medical Wastes(RMW) [5]	1,141	1%
White Goods[6]	162	0.1%
Sludges[7]	2,252	2%
Totals	**123,233**	100%

1 MSW tonnage was taken from the 2008 Locality Recycling Rate Report prepared by MRSWA and includes recycled materials.

2 The first CDD tonnage listed was taken from 2008 SWIA report prepared by MRSWA and represents only the portion of CDD materials handled by MRSWA.

3 The second CDD tonnage listed was taken from the CDD projections shown in Table 5 and represents the total projected CDD waste generation for the planning region.

4 Industrial waste tonnage includes wastes reported on 2008 SWIA report prepared by MRSWA, wastes from VT Power Plant (reported by Virginia Tech) and Corning (estimated from 2004 SWMP).

5 RMW is a not monitored by MRSWA, however EPA published rates estimate that RMW is approximately 1.2% of MSW waste stream.

6 White Goods tonnage was taken from the 2008 SWIA report prepare by MRSWA.

7 Sludge tonnage was taken from the 2008 SWIA report prepared by MRSWA.

2.2 SOLID WASTE GENERATION PROJECTIONS AND FLOW PATTERNS

Generally, solid waste is collected either directly from residences, businesses, and industries, or from convenience site collection areas. Currently, MRSWA operates a solid waste transfer station and a material recovery facility (MRF) at 555 Authority Drive in Christiansburg, Virginia to handle the waste and recycling needs of the planning region. The two facilities are located on the site of the closed Mid-County Landfill which began operations in 1982 and closed in 1998. Currently, there are not any active MSW landfills in operation within the Montgomery County planning region. Therefore, waste materials are collected at the transfer station and then transported to Dublin, Virginia to the New River Resource Authority's (NRRA) Regional Landfill, for disposal. The recyclables collected at the MRF are processed onsite for beneficial reuse and/or recycling.

Each member of the Authority is responsible for collection and delivery of all wastes and source separated recyclables to the MRSWA facilities. All waste generated by residents, businesses, and industries in the planning region is assessed a tipping fee at the transfer station. An increase in the amount of residential waste and commercial waste is expected to occur due to the continued growth throughout the planning region. A listing of all the solid waste permits issued in Montgomery County from the DEQ is included in Appendix II. The listing was developed from the DEQ's Solid Waste database, last updated on October 1, 2007.

2.3 CURRENT MARKET CONDITIONS

A jurisdiction's ability to provide recycling services to its residents and businesses is directly related to the overall value of those collected recyclables. Therefore, jurisdictions are continually evaluating available markets for recyclables that allow them to provide recycling services to residents and businesses cost-effectively. MRSWA is very aggressive in investigating markets and providing recycling services to residents and businesses. Currently, MRSWA is actively accepting aluminum cans, mixed paper, corrugated cardboard, newspaper, magazines/catalogs, glass, steel cans, plastics, used motor oil, anti-freeze, universal wastes, white goods (with and without

Freon), tires, and brush and yard waste for reuse and/or recycling. The current markets in the County and the surrounding region allow MRSWA to process these materials at their facility and then sell for recycling and/or reuse.

2.4 WASTE STREAM PROJECTIONS

MRSWA compiles information concerning the quantities of solid wastes that are generated and recycled in the planning region. MRSWA compiles the data from the planning region onto the Locality Recycling Rate Reports (LRRRs) and Solid Wastes Information and Assessment Program (SWIA) forms which are submitted annually to DEQ. The solid waste tonnages presented for years 2004-2008 are based on actually quantities presented on the LRRRs and SWIAs for the respective calendar years, except for CDD waste and RMW which are based on published generation rates.

The solid waste projections presented for years 2009-2023 have been calculated based on per capita generation rates developed for each waste stream. When local data was not available for certain waste streams or special waste types, national generation data were referenced and utilized. Supporting calculations and the 2008 solid waste generation data for the planning region and each jurisdiction is provided in Appendix III.

The solid waste projections for the planning region are presented below in Table 5. A description of the projection methodology for each of the major types of waste and the significant waste substreams generated in the region and are presented in the following sections.

2.4.1 MUNICIPAL SOLID WASTE

The Environmental Protection Agency (EPA) Office of Solid Waste and Emergency Response published per capita municipal solid waste (MSW) rates for the U.S. in a report entitled *Municipal Solid Waste in the United States: 2007 Facts and Figures Executive Summary*. The average 2007 U.S. per capita per day MSW generation estimate published in this report was 4.62 lb/person/day. The average 2007 per capita per day MSW recycling rate was 1.54 lb/person/day.

To determine if the average U.S. MSW generation rate is applicable for MRSWA, the published per capita per day value was compared to the estimated

tons per capita per day based on MRSWA's intake records for years 2004-2008. From 2004-2008, an average total of 102,110 tons per year of MSW was accepted at the MRSWA facilities. Based on review of the 2000 Census and the population projections shown in Table 2, the average population for the period of 2004 - 2008 was approximately 87,867 persons. Using the formula presented below, the per capita tonnage of MSW (PCT_{MSW}) for the planning region for 2004-2008 was 6.37 pounds per capita (person) per day.

PCT_{MSW}	=	102,110 tons/365 days
	=	280 tons per day*2000 pounds per ton
	=	559,506 pounds per day/87,867 persons
	=	6.37 pounds/person/day

For years 2004-2008 the MSW tonnages shown on Table 5, reflect the information submitted by MRSWA on the Locality Recycling Rate Reports. To calculate the total annual and cumulative MSW generation quantities, for years 2009 to 2023, the PCT_{MSW} was applied to the annual population projections for Montgomery County. Using this methodology, it is estimated that approximately 2.2 million tons of MSW will be handled by the MRSWA facilities during the planning period of January 1, 2004 – December 31, 2023.

For reference purposes, the per capita generation rates for calendar year 2008 were also calculated using the above described methodology for the separate members of the planning region. These rates are summarized below in Table 4 and the supporting calculations are included in Appendix III. Also included in Table 4, are the per capita generation rates calculated in the 2004 SWMP. It should be noted that the MSW per capita rate for MRSWA in 2008 was low in comparison to the average rate calculated above. This is most likely due to the economic recession during 2008.

Table 4. Summary of Calculated MSW Per Capita Generations Rates		
Jurisdiction	Per Capita Generation Rates	
	2004 SWMP (lb/person/day)	2008 SWMP (lb/person/day)
MRSWA	5.05	5.36
Blacksburg	3.24	1.88
Christiansburg	3.58	4.21
Montgomery County	2.69	3.50
Virginia Tech	4.00	3.84

2.4.2 CONSTRUCTION DEMOLITION DEBRIS

To calculate the waste projections for construction demolition debris (CDD), the same methodology as was performed for MSW was repeated. The average of the per capita value for 2003 published by the EPA in their report entitled *Estimating 2003 Building-Related Construction and Demolition Amounts*, dated March 2009, was approximately 3.19 lb/person/day.

From 2004-2008, SWIA reports indicated an average of 5,547 tons of CDD was accepted at the MRSWA Transfer Station. As listed above the average projected population for years 2004-2008 was approximately 87,867 persons. Using the same formula presented above, the per capita rate of CDD (PCT_{CDD}) generation for the Montgomery County planning region based on SWIA reports for 2004-2008 was 0.35 lb/person/day.

The calculated PCT_{CDD} for the planning region is low in comparison to the EPA published rate. This difference could be attributed to the fact that CDD wastes generated within the planning region are typically collected by private contractors which are not required to bring their wastes to MRSWA. It is estimated that the majority of the CDD wastes produced in the planning region are taken outside of Montgomery County for disposal (refer to Section 3.2.1 for further information on CDD disposal). Therefore, the published EPA generation rate was selected over the calculated rate for the waste projections.

To calculate the total annual and cumulative CDD generation quantities, the published PCT_{CDD} was applied to the annual population projections for Montgomery County. Using this methodology, it is estimated that approximately 1.1 million tons of CDD will be generated in the Montgomery County planning region over the planning period.

2.4.1 INDUSTRIAL WASTES

To calculate the waste projections for industrial wastes generated in the region, the per capita generation methodology as was again performed. MRSWA's SWIA reports indicate 4,931 tons of the industrial wastes were delivered to the transfer station in 2008. Other industrial wastes generated in the region include the coal ash from the coal fired Virginia Tech Central Heating Facility (Power Plant) (6,950 tons in 2002 as reported in the 2004 SWMP and 12,375 tons in 2008 as reported by Virginia Tech) and fired cullet and dust from Corning (2,100 tons in 2002 as reported in the 2004 SWMP). Both materials are direct hauled to the NRRA landfill for use as alternate daily cover (ADC).

To estimate the total industrial waste for the planning region for years 2004-2007, tonnages recorded on the SWIA reports for the corresponding years were utilized to estimate the transfer station contribution, the Corning tonnage of 2,100 ton per year was assumed constant, and for the VT Power Plant, a linear increase was assumed between the tonnages reported in 2002 and 2008. To estimate the total industrial waste generation for the region in 2008, the tonnage received at the transfer station was added to the tonnage direct hauled to NRRA resulting in a total 19,406 tons. Using the same formula presented above, the per capita (PCT_{IND}) for the Montgomery County planning region for 2008 was 1.2 lb/person/day which is a significant increase over the 2002 PCT_{IND} of 0.58 lb/person/day.

To calculate the total annual and cumulative industrial waste generation quantities the 2008[2] PCT_{IND} was applied to years 2009-2023. Using this methodology, it is estimated that approximately 393,148 tons of industrial wastes will be generated in the Montgomery County planning region over the planning period.

2.4.2 REGULATED MEDICAL WASTES (FIND SOURCE AND DATE)

To estimate the regulated medical waste (RMW) production within the region, published values presented in the 1990 report from the US Congress Office and Technology Assessment (OTA) titled *Finding the RX for Medical Wastes* were used since local data was not available. The OTA estimated that medical wastes composed 0.3%-2.0% of the MSW stream. A value of 1.2 % was used for the waste projections for this planning region which equates to a per capita rate of approximately 0.07 lb/person/day.

By applying the PCT_{RMW} to the population projections for the region, it is estimate that approximately 23,821 tons of RMW will be generated in the Montgomery County planning region over the planning period.

2.4.3 RECYCLABLES

As stated in Section 2.4., average per capita MSW recycling rate, published by EPA in 2007, was 1.54 lb/person/day.

To determine if the average U.S. MSW recycling rate is applicable for the Montgomery County planning region, the published value was compared to the recycling rate (RR) and the adjusted recycling rate (ARR) from MRSWA's 2004-2008 Locality Recycling Rate Reports. The recycling rate is defined as the sum of the quantity of Principal Recyclable Material (PRM) divided by the sum of the PRM and total MSW disposed, multiplied by 100, as shown in the following equation:

$$\frac{Total\ PRM}{Total\ PRM + Total\ MSW} \times 100$$

[2] The average PCT_{IND} was not calculated for years 2004-2008, due to lack of information from 2004-2007 for the VT Power Plant.

The ARR is determined by adjusting the base recycling rate to include credits for material reuse, non-MSW recycling, and use of recycling residue.

For the period of 2004-2008 average ARR for the planning region was approximately 32%[3] which equates to an average per capita rate of 2.03 lb/person/day. This per capita rate was assumed to be constant over the remainder of the planning period (2009-2023). For the purpose of this evaluation, recyclable materials were assumed to include aluminum cans, corrugated cardboard, newspaper, magazines/catalogs, glass, steel cans, textiles, plastics, used motor oil, anti-freeze, universal waste, tires, Freon, abandoned vehicles, and brush and yard waste.

For years 2004-2008 the recycling tonnages shown on Table 5, reflect the information submitted by MRSWA on the Locality Recycling Rate Reports. To calculate the total annual and cumulative recyclable generation quantities, for years 2009 to 2023, the PCT_{REC} was applied to the annual population projections for Montgomery County. Using this methodology, it is estimated that approximately 679,895 tons of recyclables will be handled by MRSWA during the planning period.

2.4.4 SPECIAL WASTES

In the 2004 SWMP waste projections, the per capita generation rates for the special waste categories of white goods and sludges were both 0.07 lb/person/day, rates which were based on national rates reported by the EPA, and from MRSWA scale data, respectively. However, for the 2009 SWMP revisions, SWIA reports were available for both waste types for years 2004-2008. Therefore, for years 2004-2008, the white goods and sludge tonnages shown on Table 5, reflect the information reported on the SWIAs.

The average annual intake for each waste and the average population for years 2004-2008 were used to calculate the average per capita generation rate over that period. The average per capita rate for white goods (PCT_{WG}) was calculated to be 0.02 lb/person/day and assumed to remain constant over the

[3] Typically, the RR is 1% (or less) than the ARR for the planning region.

planning period. Using this methodology, it is estimated that approximately 6,933 tons of white goods will be generated in the Montgomery County planning region over the planning period.

The average per capita generation rate for sludges (PCT_{SL}) for the period of 2004-2008 was calculated to be 0.18 lb/person/day and assumed to remain constant over the remainder of the planning period. It is estimated that approximately 61,612 tons of sludge waste will be generated in the Montgomery County planning region over the planning period.

Table 5. MONTGOMERY COUNTY, VIRGINIA SOLID WASTE PLANNING REGION - WASTE STREAM PROJECTIONS

			Waste Streams							
			Municipal Solid Waste (MSW)			Special Wastes				
Plan Year	Calendar Year	Population	Total MSW Tons/Yr	Publicly-Cont. MSW Tons/Yr	Recyclables MRF Mat. Tons/Yr	White Goods Tons/Yr	Sludges Tons/Yr	Construct. and Demol. Wastes Tons/Yr	Industrial Waste Tons/Yr	Regulated Medical Wastes Tons/Yr
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	2004	86,427	101,019	51,061	32,842	451	2,372	50,473	14,118	1,104
2	2005	87,141	109,858	55,529	39,254	436	3,911	50,890	15,731	1,113
3	2006	87,861	96,614	48,835	22,763	413	3,959	51,311	15,868	1,122
4	2007	88,586	115,642	58,453	34,797	269	2,296	51,734	18,483	1,132
5	2008	89,318	87,421	44,188	23,243	162	2,252	52,162	19,406	1,141
6	2009	90,056	104,705	52,924	33,297	329	2,958	52,593	19,558	1,150
7	2010	90,800	105,570	53,362	33,572	331	2,983	53,027	19,719	1,160
8	2011	91,486	106,368	53,765	33,826	334	3,005	53,428	19,868	1,169
9	2012	92,178	107,172	54,171	34,082	336	3,028	53,832	20,019	1,178
10	2013	92,874	107,981	54,580	34,339	339	3,051	54,238	20,170	1,186
11	2014	93,576	108,798	54,993	34,599	342	3,074	54,648	20,322	1,195
12	2015	94,283	109,620	55,408	34,860	344	3,097	55,061	20,476	1,204
13	2016	94,996	110,449	55,827	35,124	347	3,121	55,478	20,631	1,214
14	2017	95,714	111,283	56,249	35,389	349	3,144	55,897	20,787	1,223
15	2018	96,437	112,124	56,674	35,657	352	3,168	56,319	20,944	1,232
16	2019	97,166	112,972	57,103	35,926	355	3,192	56,745	21,102	1,241
17	2020	97,900	113,825	57,534	36,198	357	3,216	57,174	21,261	1,251
18	2021	98,588	114,625	57,938	36,452	360	3,239	57,575	21,411	1,259
19	2022	99,281	115,431	58,346	36,708	362	3,261	57,980	21,561	1,268
20	2023	99,978	116,241	58,755	36,966	365	3,284	58,387	21,713	1,277
Totals			**2,167,716**	**1,095,696**	**679,895**	**6,933**	**61,612**	**1,088,953**	**393,148**	**23,821**

Notes:

(1) Population projections taken from Table 2.
Future waste quantities (2009-2023) are estimated by multiplying the projected population by the "per capita generation rate" for each waste stream except when otherwise noted below.

(2) The MSW tonnage shown for years 04-08 was taken from corresponding year's Locality Recycling Rate Reports. The average per capita generation rate for the period of 04-08 was 6.37 lb/person/day. This rate was assumed to remain constant over the remainder of the planning period (09-23).

(3) 2008 scale records indicated that the 51% of the MSW brought to the Transfer Station was publicly controlled (meaning it came from the member jurisdictions). This percentage was applied to the projected annual MSW tonnage and assumed to remain constant over the entire planning period (04-23).

(4) The recycling tonnage shown for years 04-08 was taken from corresponding year's Locality Recycling Rate Reports. The average recycling rate for the period of 04-08 is 32% of the MSW stream, of approx. 2.03 lb/person/day. This per capita rate was assumed to remain constant over the remainder of the planning period.
Recyclable materials include: vegetative/yard wastes, tires, aluminum & steel cans, glass, plastics, OCC, ONP, mixed paper, textiles, used oil, antifreeze, fluorescent bulbs & batteries.

(5) White good tonnages shown for years 04-08 were taken from the corresponding year's SWIA reports. The average per capita generation rate for the period of 04-08 was 0.02 lb/person/day. This generation rate was assumed to remain constant over the remainder of the planning period (09-23).

(6) Sludge tonnages shown for years 04-08 were taken from the corresponding year's SWIA reports. The average per capita generation rate for the period of 04-08 was 0.18 lb/person/day. This generation rate was assumed to remain constant over the remainder of the planning period (09-23).

(7) The CDD tonnages shown for the planning period are based on published per capita generation rates, not on MRSWA data. MRSWA data was not used because an unknown percentage of CDD generated within the planning region is thought to be direct hauled to landfills instead of MRSWA facilities. The per capita generation rate estimated in an EPA report titled "Estimating 2003 Building-Related Construction and Demolition Amounts" was 3.19 lb/person/day. This published generation rate was assumed to remain constant over the planning period.

(8) Industrial waste tonnages shown include the materials accepted at the Transfer Station and ashes from the VT Power Plant and Corning. Transfer Station tonnages for years 04-08 were taken from the corresponding year's SWIA reports. For Corning, in 2002 it was reported that approx. 2,100 tons of wastes were generated, a rate assumed to remain constant from 04-08. For the VT Power Plant, reports from VT indicated approx. 6,950 tons in 2002 and 12,375 tons in 2008 had been generated. To estimate years 04-07, a linear increase was assumed between the reported tonnages in 2002 and 2008. For the waste projections in years 09-23 a per capita generation rate was calculated based on the 2008 tonnage. In 2008, the industrial waste per capita generation rate was calculated for the planning region to be 1.19 lb/person/day, a rate assumed to remain constant for years 09-23.

(9) Regulated medical waste was reported by the U.S. Congress Office of Technology Assessment to range from 0.3%-2.0% of the MSW stream. A value of 1.2% was used for this Plan which equates to a per capita rate of approximately 0.07 lb/person/day and was assume to remain constant over the planning period.

3.0 SOLID WASTE MANAGEMENT SYSTEM

This section presents information regarding the services and facilities that are utilized to collect and manage solid wastes generated within the Montgomery County planning region. These services are provided by both the public and private sectors, with the latter mainly responsible for providing collection and disposal services to commercial and industrial customers. Information is provided for the Authority and all of the member jurisdictions.

3.1 MUNICIPAL SOLID WASTE MANAGEMENT

3.1.1 MRSWA

The Montgomery Regional Solid Waste Authority was formed in December 1994 to provide MSW disposal services and recyclables processing services, to the residents, businesses, industries and institutions for the member jurisdictions. The Authority's operations are conducted on property adjacent to the closed Mid-County Landfill which houses the Material Recovery Facility, Transfer Station, Tire Processing Facility and Mulch Facility.

A chart presenting the MRSWA organization is provided below in Figure 2. As shown, MRSWA is managed by an Executive Director who reports directly to a Board of Directors which is comprised of representatives from each of the four jurisdictions served.

The Executive Director is responsible for the timely and efficient provision of all the MRSWA services which are grouped into three main areas: solid waste services, recycling processing, and education and training. The Executive Director is directly responsible for solid waste services and also holds the title of the Director of Solid Waste Services shown in Figure 2. Reporting to the Executive Director are two managers, each of whom are responsible for the operation of the other major facets of the MRSWA – recyclables processing and recycling education and training.

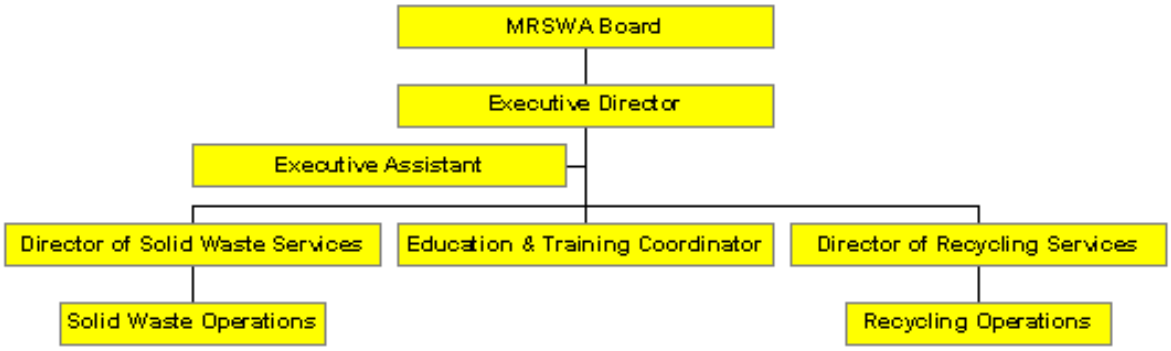

Figure 2. MRSWA Organizational Chart

3.1.1.1 MSW TRANSFER

The MRSWA provides MSW transfer and hauling services for the residents and businesses in the planning region. The MRSWA Transfer Station has a daily capacity of 1,000 tons per day. Based on 2008 scale data, approximately 64,178 tons of MSW pass through the transfer station per year. Based on review of the current intake and the population and waste projections for the planning region, it anticipated that the capacity of the transfer station will be adequate to accommodate the MSW transfer needs for the region over the planning period.

At the transfer station, the MRSWA charges a $51/ton tipping fee to cover costs of transportation, the tipping fee at NRRA Regional Landfill, labor, and other overhead costs. Large tractor-trailers haul an average of 19.5 tons at a time to the NRRA landfill near Dublin, VA. MRSWA must also pay a tipping fee to NRRA for disposal at their landfill. Commercial haulers which operate independently in the region are not required to use the MRSWA facilities and it is believed that a large portion of the wastes collected by commercial haulers is transported to out-of-county facilities for disposal.

3.1.1.2 MSW DISPOSAL

The member jurisdictions, businesses, and institutions rely, for the most part, on the MRSWA Transfer Station to receive the MSW collected in the region. As stated previously, MRSWA subsequently transfers and hauls the MSW to the NRRA Regional Landfill for disposal.

The NRRA Regional Landfill is a 350-acre landfill that currently disposes of approximately 170,000 tons per year. At the current rate of disposal, the NRRA Regional Landfill is estimated to have a service life of 100 years. Therefore, it is concluded that the NRRA Regional Landfill will be able to provide the MSW disposal capacity required for the region throughout the planning period.

3.1.1.3 MSW Recycling and Waste Reduction

As stated previously, the MRSWA owns and operates a materials recovery facility (MRF) in Christiansburg, Virginia. The MRF provides recyclables processing services for the four member jurisdictions as well the jurisdictions comprising the New River Resource Authority, the City of Roanoke, and Giles County. The MRF also receives recyclable products and materials from local industries. In addition, MRSWA operates a "Buyback Center" within the MRF which purchases aluminum cans, scrap aluminum, copper, brass, insulated wire and other marketable products from local citizens and businesses.

Built in 1996, the MRF is designed to process up to 80 tons per day of recyclables that are brought to the MRF and processed on the fiber conveyor or the container conveyor. The fiber stream consists of mixed paper, and source separated products including newspaper, magazines, office paper, white ledger and corrugated cardboard. These fibrous materials are processed by MRF workers who hand pick contaminants from the materials before they are baled for sale to secondary materials markets.

The second stream of recyclables consists of commingled containers, including glass bottles and jars (clear, green and brown), #1 and #2 plastic bottles and jugs, and steel and aluminum cans. These containers are separated by a combination of mechanical and manual techniques into their respective container types and colors and are subsequently processed for sale to secondary materials markets.

Once at the MRF, the commingled containers are separated on the commingled sort line. The process begins with a magnet to remove steel and metal containers and is then followed by an air classifier system, then attendants complete the sorting.

The MRF's operating costs, for the most part are offset by revenues received from the sale of recovered recyclables and processing fees, with shortfalls being covered with revenue from the transfer station. As indicated in Appendix III, the MSW adjusted recycling rate for the planning region was reported to be approximately 27% in 2008. Therefore, the region is in compliance with the DEQ requirement to maintain an MSW recycling rate of 25% and is not required to implement additional MSW recycling programs to meet this requirement. In addition, based on review of the population and waste projections for the planning region, it anticipated that the capacity of the MRF will be adequate to accommodate the recycling needs for the region over the planning period.

3.1.1.4 SPECIAL WASTE SERVICES

MRSWA handles special wastes in accordance with local and federal regulations. The special waste substreams that are generated within the planning region include:

- Tires
- White goods
- Land Clearing Debris/Yard Waste
- Waste Oil
- Universal Waste
- Sludges

The local governments, residents, businesses and institutions rely, for the most part, on the Authority (for tires, batteries, white goods, sludges, and land clearing debris), as well as private retailers (for used oil and batteries), to manage these wastes.

Sludges brought to the transfer station are mixed with other MSW loads and taken to the NRRA landfill for disposal. Universal wastes

collected by MRSWA are temporarily stored at the MRF until periodic pick up by private contractor. The remaining special waste listed above (tires, white goods, and land clearing debris) are generated in the largest quantities in the planning region and are described in more detail in the following sections.

3.1.1.4.1. TIRES

The Commonwealth of Virginia prohibits the landfilling of whole tires because of their buoyancy in landfills. MRSWA collects and processes tires at a permitted area located within the closed landfill property. The MRSWA contracts to have the tires shredded periodically. Once processed, the tire material is transferred to the NRRA landfill for disposal or use as alternate daily cover (ADC).

Based on the 2008 Locality Recycling Rate Report, MRSWA processed 527 tons of tires during calendar year 2008 which represents 2.3% of the total recyclable materials generated in the County. As presented in Section 2.4.3, approximately 679,895 tons of recyclable materials will be generated in the Montgomery County planning region from 2004 through 2023. Assuming that 2.3% of this is tires, it is estimated that 15,640 tons will be generated and collected at MRSWA over the planning period. It is anticipated that this facility will continue to have the capacity to serve the tire processing needs for the region over the entire planning period.

3.1.1.4.2. WHITE GOODS

As with tires, white goods must also be "processed" before they can be recycled. MRSWA accepts white goods and removes the Freon and PCB containing parts. An additional fee is charged for disposal of white goods if they contain Freon. MRSWA contracts Freon removal from collected white goods. The MRSWA contracts to have the processed white goods removed from the property periodically. This arrangement is planned to continue throughout the planning period and enable MRSWA to meet the white goods processing needs of the planning region.

3.1.1.4.3. LAND CLEARING DEBRIS / WOOD WASTES

The local governments, residents, businesses and institutions rely on a number of processing facilities in the region to process land clearing debris and wood wastes. However, to assist the region with these wastes, the Authority operates a mulch grinding facility within the closed landfill area, adjacent to the tire processing facility. Once processed by MRSWA, the generated mulch is available to residents for purchase.

Based on the 2008 Locality Recycling Rate Report, MRSWA processed 5,227 tons of land clearing debris and wood waste during calendar year 2008 which represents 22.5% of the total recyclable materials generated in the region. As presented in Section 2.4.3, approximately 679,895 tons of recyclable materials will be generated in the Montgomery County planning region from 2004 - 2023. Assuming that 22.5% of this will be land clearing/wood wastes, it is estimated that 152,976 tons will be generated and collected at the MRSWA between 2004 and 2024. It is anticipated that the mulch facility will have the capacity to serve the land clearing debris/ wood waste processing needs for the region over the entire planning period.

3.1.2 TOWN OF BLACKSBURG

The Town of Blacksburg created a Solid Waste and Recycling Fund in 1993. The Solid Waste and Recycling Fund is an enterprise fund, in which the money is used solely for the purpose of waste minimization and recycling. Citizens pay the Town for refuse and recycling services through a utility fee, which is charged on a monthly basis. The Fund monies are used to pay the Town's contractors as well as to cover in-house costs. The Town utilizes a competitive multi-year contract to secure a contractor to conduct refuse and recycling services. Refuse is collected weekly, according to a quadrant system by automated side-loading trucks. In the case of elderly or disabled customers, service is provided at the customers backdoor using a manually operated truck,

this service is provided at no additional charge. Recycling is collected curbside, using semi-automated dual compartment trucks.

The Town has implemented an Environmental Management Program, which contains a section that directly addresses its intent to reduce the amount of material sent to the landfill as waste. The Town has assembled an internal group of recycling assistants, which meet periodically in order to discuss waste reduction and recycling goals and to find ways to achieve them for Town facilities.

The Town, in partnership with the YMCA at Virginia Tech, has developed a community e-cycling program. Citizen's take used electronics to the YMCA Thrift Store. Usable items are sold at the store and thus re-used. Electronics at the end of their useful life are recycled. The Town does a substantial amount of public education about recycling utilizing various media such as brochures, the Town website, Town publications, public access television, and e-news. The Town is assisting interested Blacksburg schools in developing recycling programs. All public schools within jurisdictional limits are recycling mixed paper and comingled containers. The Town collects residential recyclables through the provision of a curbside recycling service. A mixed paper and cardboard drop-off center is managed by the Town. In addition, a community single stream recycling center is provided by the YMCA at Virginia Tech. These services provide Blacksburg citizens with the opportunity to recycle five primary recyclable items. The Town has developed a partnership with the Downtown Merchants of Blacksburg and the YMCA at Virginia Tech to allow citizens to recycle batteries and compact fluorescent lamps. In addition, the Town received an EPA grant that allows businesses to recycle fluorescent lamps.

The Town has established an internal recycling program that provides the opportunity for all Town staff to recycle mixed paper and comingled containers in its facilities. In addition, the Town is recycling batteries, electronics, and toner cartridges. Scrap metals generated in Town operations are collected at the Public Works lot and recycled. White goods, tires, brush, and leaves collected in Town operations are also recycled.

The Town participates in several programs that are aimed at waste reduction, and that encourage recycling, on its own and regionally, including a Hazardous Household Waste Day. The Town supports "The Big Event" which is an annual clean up event sponsored by Virginia Tech. Many of Blacksburg's streets are patrolled for litter during this event and the Town provides cleanup materials and litter routes for volunteers to use and follow. The Town maintains an "Adopt A Park" program, which gives citizens an opportunity to volunteer in their community, and provides litter pickup projects for interested people or groups. The Town, Sustainable Blacksburg, and Virginia Tech host an annual Sustainability Week. The Week is focused on moving residents from education to action on environmental issues. Waste minimization and recycling is a core component of the activities.

The Town is committed to continuing to enhance both its residential and facilities recycling programs, and in both cases, education will remain a focal point. Fluorescent lamps, ballasts, toner cartridges, batteries and other universal waste are collected and temporarily housed in a universal waste storage building, to await further handling in accordance with RCRA regulations. The Town's Office of Waste Reduction and Recycling offers support and assistance to businesses who wish to start up recycling or waste reduction programs. Town staff continues to work with apartment residents, managers, and owners to ensure that apartment dwellers have the proper recycling opportunities at apartment complexes per the Town code. The Town utilizes Poplar Manor Enterprise, PME, to compost plant material and some food waste from events.

3.1.2.1 MSW Collection

The Town of Blacksburg provides a total of 8 collection services to 5,216 dwelling units and small businesses. These services are summarized in Table 6. Single-family households are estimated to comprise approximately 45% of the Town's population when student population numbers are included. Collection services are provided to single family homes or multifamily homes of four units or less. Service is provided by the Town through a contract with a private refuse/recycling service

company. Businesses and multifamily homes of greater than four units may choose to contract with the Town for service.

The Town contracts for the curbside weekly collection of refuse and recyclables from the Town's single-family residences and multifamily residences or four units or less. Both refuse and recyclables are collected on the same day from each residence. Residents may choose a 96, 64, or 35 gallon roll-out container to set out refuse for collection and 14-gallon recycling bins, provided by the Town, to set out recyclables.

Residents are currently charged $21.86 per residence per month for the weekly collection of refuse and recyclables, the twice yearly collection of brush, fall leaf pickup, Christmas tree pickup and twice yearly bulky waste collection. These charges include tipping fee charges at the MRSWA Transfer Station. The Town pays for collection by contractor and its own service costs with these monies.

Currently, commercial, industrial, and multi-family apartment complexes privately contract for their own refuse collection services. Approximately 62% of the housing units in the Town consist of multi-family units which are highly populated by students. The major haulers providing commercial and multi-family refuse collection services are Republic Services Inc., Waste Management, Inc., and Bob's Refuse, Inc.

The wastes and recyclables collected from single-family residences are brought to the MRSWA Transfer Station and/or the MRF facility. However, commercial haulers serving the commercial, industrial, and multi-family residences are not required to use the MRSWA facilities.

Table 6. Solid Waste Collection Services Provided by the Town of Blacksburg, Virginia				
Service	**Description**	**Service Provider**	**Collection Method**	**Frequency**
Refuse Collection-Curbside Customers	Curbside collection of refuse in 96 gallon containers	Contractor (Competitive multi-year contract)	Automated collection vehicles	Weekly
Refuse Collection – Backdoor Customers	Backdoor collection of refuse and recyclables for elderly or disabled individuals	Contractor (Competitive multi-year contract)	Semi-automated collection vehicles	Weekly
Recyclables Collection	Curbside collection of commingled containers and mixed paper in curbside recycling bins	Contractor (Competitive multi-year contract)	Side-loading, dual-compartment vehicles	Weekly
Brush Collection	Curbside collection of brush (up to 7' long and 6" in diameter)	Town	Backhoe/Dump Truck	Semi-Annual (Spring and Fall)
Fall Leaf Pickup	Curbside collection of piled and bagged leaves	Town	Vacuum machines and dump trucks	Fall
Bulky Waste Collection	Curbside collection of bulky waste, including furniture, tires, appliances, carpet etc.	Town	Backhoe/Dump Truck	Semi-Annual (Spring and Fall)
Christmas Tree Collection	Curbside collection of Christmas trees	Town	Backhoe/Dump Truck	Annual (Winter)
Special Pickup	Bulky waste collection	Town (Additional Fee)	Backhoe/Dump Truck	Call in Basis

3.1.2.2 MSW RECYCLING AND WASTE REDUCTION

The Town of Blacksburg facilitates waste reduction and recycling by encouraging citizens to recycle and by setting an example through its recycling program established for Town buildings. Grinding brush and Christmas trees for combustion as a fuel in a waste-to-energy facility also reduces the flow of waste to the landfill. Live Christmas trees are often collected to plant in the Town's parks.

In 1992, the Town initiated a curbside recycling program collecting containers, mixed paper, and newspaper for refuse customers.

Currently, the program collects mixed paper and commingled containers. In addition, Blacksburg adopted an Apartment Recycling Ordinance, which mandates that apartments must provide recycling collection facilities for the same products that the Town includes in its recycling program. Town residents can also dispose of refuse and recycling at the Montgomery County consolidated sites.

The Town is currently working with citizens and downtown merchants to create a volume based pay-as-you-throw system for downtown businesses.

3.1.2.3 SPECIAL WASTE SERVICES

Every year Blacksburg participates in an annual "Household Hazardous Waste Day" – conducted in coordination with the Town of Christiansburg and Montgomery County - to collect household hazardous materials that can be recycled. Currently, items collected include batteries, antifreeze, paint and solvents. This limits the amount of hazardous waste that makes it to the landfill, allows citizens to easily remove dangerous materials from the household, and promotes recycling. A Paint Exchange Day is included and is held on the same day and in the same location.

3.1.3 TOWN OF CHRISTIANSBURG

The Town of Christiansburg provides curbside collection for single-family residences and businesses using in-house collection crews and equipment. Most commercial businesses and apartment complexes privately contract out for their waste removal. The solid waste and recycling services provided by the Town are funded, for the most part, by the users of these services.

3.1.3.1 MSW COLLECTION

The Town of Christiansburg provides a total of 6 collection services to the Town's residences. Services, which residents receive, are summarized in Table 7. The Town provides these services with its own collection crews and equipment. Specifically, the Town uses rear-loading

packer trucks staffed by 3-person crews. The Town employs the "manual" collection approach in which the collectors manually lift the containers and empty them into the collection vehicle.

In addition to weekly refuse collection, the Town provides the following periodic collection services to single family residences:

- Curbside collection of brush and bulky wastes – twice per year
- Curbside collection of leaves – twice per year
- Curbside collection of Christmas trees – once per year.

Residents who sign up to receive residential solid waste collection services are charged $15.00 per household per month.

The Town also provides regular collection services to 237 businesses located in the Town. Collection frequency varies from weekly to daily depending on the business.

Commercial customers are charged $5.60 per cubic yard per "pull"[4] for dumpster service. Total program revenues, from all customers were reported by the Town to be $1,127,171 in fiscal year 2008-2009 while program costs for all services were reported by the Town to be $1,106,876. It should be noted that program costs do not include amortized capital costs for refuse collection equipment or containers. The MRSWA reported that 9,345 tons of MSW were received from the Town of Christiansburg in fiscal year 2008. In light of this tonnage, the costs of the Town's solid waste services are on the order of $118 per ton (a reduction from the 2002 estimate of $121 per ton).

The wastes collected by the Town from single-family residences and businesses are brought to the MRSWA Transfer Station and/or MRF. Single-family residences, multi-family apartment complexes, businesses and industries not served by Town crews can privately contract for their own refuse collection services. As with Blacksburg, commercial haulers operating in Christiansburg are not required to use the MRSWA facilities.

[4] A "pull" refers to the emptying of the refuse container contents into the collection vehicle.

and it is believed that at least a portion of the wastes collected by commercial haulers is transported to out-of-county facilities for disposal.

Table 7. Solid Waste Collection Services Provided by the Town of Christiansburg, Virginia

Service	Description	Service Provider	Collection Method	Frequency
Residential Refuse Collection	Curbside collection of refuse in containers provided by residents	Town	Manual Collection Vehicles	Weekly
Residential Leaves Collection	Curbside collection of leaves	Town	Vacuum/Dump Truck	Semi-Annual (Spring and Fall)
Residential Brush and Bulky Waste Collection	Curbside collection of bulky waste, including furniture, tires, appliances, brush, carpet etc.	Town	Backhoe/Dump Truck	Semi-Annual (Spring and Fall)
Residential Christmas Tree Collection	Curbside collection of Christmas trees	Town	Backhoe/Dump Truck	Annual (Winter)
Commercial Refuse Collection	Curbside collection of refuse in containers provided by businesses	Town	Manual Collection Vehicles	Daily-Weekly
Recycling	Drop-off sites	Town	Manual Collection Vehicles	24 Hours/Day

3.1.3.2 MSW Recycling and Waste Reduction

The Town of Christiansburg provides three unattended drop-off sites for recycling. In addition, there is a drop-off location for corrugated cardboard located at the Parks and Recreation Department. Residents can also utilize the County's consolidated collection sites to drop off their recyclables.

The Town of Christiansburg encourages its citizens to take advantage of the Goodwill, Salvation Army, Red Cross, etc. to facilitate reuse of materials. These organizations collect donated material such as furniture, clothing, and other items and sell them to the public. Another way Christiansburg facilitates reuse is through surplus auctions.

3.1.3.3 SPECIAL WASTE SERVICES

The Town encourages citizens to participate in the annual Latex Paint Exchange day and the household hazardous waste collection events sponsored by Montgomery County and the Towns of Christiansburg and Blacksburg.

3.1.4 MONTGOMERY COUNTY

The County currently operates a combination of unattended green box drop-off sites and consolidated collection sites to serve the rural portions of Montgomery County. The County is in the process of reducing the number of green box drop-off sites by replacing them with a smaller number of "full service" consolidated collection sites that accept both wastes and recyclables.

3.1.4.1 MSW COLLECTION

There are presently ten consolidated collection sites and one green box site located throughout Montgomery County. These sites are fenced and the consolidated sites are staffed with County employees. The consolidated collection sites are open 7 days per week with the following operating hours:

- Monday-Friday: 7 am – 6 pm[5]
- Saturday: 8 am – 6 pm
- Sunday: Noon – 6:00 pm

The sites are equipped with a compactor that is used for household refuse and non-compacting roll off containers for all of the recyclables accepted at the MRSWA Material Recovery Facility (MRF), including commingled containers, newspaper, white office paper and corrugated. Used motor oil is also accepted at the sites if it is brought to the sites in closed containers. Brush is not collected at the sites. Large household items and tires are also accepted at the sites.

There are numerous advantages to the "full service" consolidated collection sites, including the following:

[5] Monday – Friday hours are 7:00 am – 7:00 pm during daylight savings time.

1. Supervision of the materials received
2. Operation of a compactor unit
3. Call-for-pickup transportation system
4. Opportunity for enhanced recycling and ongoing education
5. Provides for shifting to a weight based or pay-as-you-throw fee structure
6. Prevents out-of-county dumping

The locations all the consolidated sites are Prices Fork, Coal Bank Hollow, Ellett, Elliston-Lafayette, Riner, Merrimac, Rogers, Plum Creek, McCoy and Christiansburg Wayside, as well as the full service option at the MRSWA Transfer Station. In response to public demand, as funding becomes available and as new traffic patterns emerge additional sites may also be identified. One unattended green box site is in Alleghany Springs.

The County operates two roll-off trucks to service the consolidated collection sites and one front-end loader to service the remaining green box sites.

3.1.4.2 MSW Recycling and Waste Reduction

Montgomery County provides ten consolidated collection sites that are attended and one green box site which is unattended. At the sites, citizens can drop off their MSW as well as recyclable materials: newspaper, magazines, commingled containers and cardboard. The consolidated collection sites also take motor oil, tires, vehicle batteries, and white goods in addition to other recyclable materials. Funding for all recycling activities comes from the Utility Fund and the General Fund.

3.1.4.3 Special Waste Services

The County also sponsors an annual Paint Exchange day. Once a year, citizens can bring all of their left over paint to a designated location for drop off or exchange for another citizen's paint. This activity keeps paint out the waste stream, it cannot go into the landfill because it is liquid, and it reduces the amount of household hazardous waste.

Every year the County participates in an annual "Household Hazardous Waste Day" to collect household hazardous materials that can

be recycled. Currently, items collected include batteries, antifreeze and solvents. This limits the amount of hazardous waste that makes it to the landfill, allows citizens to easily remove dangerous materials from the household, and promotes recycling.

The County encourages citizens to take all "E-Waste" to MRSWA for recycling rather than disposal to the landfill. "E-Waste" includes computers, monitors, keyboards, televisions and cell phones.

3.1.4.4 ILLEGAL DUMPING

Montgomery County continues to crack down on illegal dumping by employing a compliance officer. This officer has the authority to investigate, summons, and convict illegal dumping offenders. As a result, the rate of illegal dumping has decreased, but is still a concern in the County.

3.1.5 VIRGINIA TECH

The collection process for MSW and recycling material begins with the occupants of each building. Building occupants are responsible for taking their recyclable materials from their offices, rooms, or work stations to a central collection location. The Housekeeping staff typically is responsible for transferring these materials from the central collection location to a designated pick-up location outside the building. The Director of Buildings, Grounds, and Housekeeping Services in the Facilities Services Department, has the overall responsibility for trash and recycling material collection outside the buildings, and for delivery to the MRSWA facilities, or to another location if deemed applicable. The Facilities Services Department utilizes a combination of in-house collection crews and contracted services to manage MSW and recycling material. Specialized wastes are referred to the office of Environmental Health & Safety Services.

In-house crews provide daily collection of corrugated cardboard (utilizing a rear-load packer truck), comingled containers, mixed paper, and trash from several hundred small outside trash receptacles. Contracted services employees provide daily and weekly trash collection of our large trash containers including

the trash compactors at designated dining facilities locations. For special events such as student move-in (held prior to the opening of the fall semester), home football games (held during the fall semester), and student move- out (held during exam week and Commencement in the spring semester), additional contracted support is utilized. Student move-in generates nearly 30 tons of corrugated cardboard. During student move-out provisions are made for the collection of usable discards through the very popular "Y-Toss?" program. The YMCA at Virginia Tech and Virginia Tech Waste Management co-sponsor "Y-Toss?" and it involves a large number of student, staff, faculty, and local volunteers. Reusable items are taken the local YMCA Thrift Store and sold just prior to the start of the fall semester. The "Y-Toss?" program received a 2009 Governor's Environmental Excellence "Bronze" Award.

A drop site in the Overflow Parking Lot located near the Duck Pond provides bins for volunteer recycling of corrugated cardboard, commingled containers, and mixed paper. The university reinstated the paper recycling program in 2007 and student volunteers have been directly responsible for this very popular and successful program. A comprehensive recycling plan will be developed to incorporate mixed paper recycling in the residence halls.

3.1.5.1 MSW COLLECTION

Virginia Tech is a large, complex institution which has over 125 major buildings and an ongoing robust new construction and major renovation program that will provide state-of-the-art facilities for the future. The main campus has 22 residence halls for nearly 9,000 students, 11 dining facilities, a veterinary college, numerous research halls with hundreds of specialized science and engineering labs, a variety of agriculture facilities, and a premier hotel/conference center/alumni hall. The total daily population has over 30,000 students (full and part time), and over 7,100 staff and faculty. Virginia Tech is a member of the Atlantic Coast Conference (ACC), and benefits from numerous first class athletic facilities. MSW and recycling collection must therefore be dependable, flexible, and substantial. Virginia Tech Waste Management

consequently depends heavily upon contract services to supplement in-house collection. The university's waste stream is not constant over the calendar year, but increases dramatically at the beginning and end of the academic year, and tapers off as dramatically during the summer months. Yet these cycles are counterbalanced by others: pruning and mowing operations during the growing season; infrastructure renovations and surplus of dorm furniture during the summer; and capital construction projects during all months of the year. Indeed, only a portion of the university's total MSW is covered by this report. Renovation and new building contractors are responsible for disposal of CDD waste for capital projects.

MSW collection from residence halls has historically been among the most difficult challenges. The installation of large-volume compactors at the major residence halls has helped substantially for it has shifted responsibility for the handling of personal trash and recyclables to the students and away from housekeepers. Virginia Tech Waste Management is exploring the possibility of using a process to separate recyclables from waste in an off campus facility. This would allow the collection of waste and recyclables in one stream from location such as residence halls.

3.1.5.2 MSW Recycling and Waste Reduction

Materials now recycled by Virginia Tech Waste Management and other university departments include: corrugated cardboard, mixed paper, Print Shop paper cuttings, aluminum cans, glass bottles (includes brown), steel cans, plastic bottles (#1 & #2), scrap metals (includes old farm equipment, air handlers, steel pipe, copper cabling), shipping pallets, leaves/brush, fluorescent lamps & ballasts, toner cartridges, kitchen grease, e-waste (monitors, hard drives, printers, microwaves, TVs, etc), auto batteries, and tires. In addition, materials collected and credited by state DEQ as "Solid Waste Reused" include carpets, furniture, room accessories (e.g., fans, shelving, bedding, and lamps), clothes, mattresses, and CDD waste.

Virginia Tech is nationally recognized for consistently having an outstanding dining program. Given the increased interest in sustainability by our students, the Director of Housing and Dining Services formed a student advisory group, hired a Dining Services Sustainability Coordinator, and has implemented a number of successful green initiatives with more on the way. For example, our two "All you Care to Eat" dining facilities are "trayless" resulting in reduced food waste and dishwashing requirements and, therefore, reduced water and electricity consumption. In 2008 a highly successful pilot composting program was initiated at the Southgate Food Processing Center with Popular Manor Enterprises from nearby Riner, Virginia. The composting program was expanded to the Owens Hall Food Court at the beginning of the 2009 fall semester with expansion to the remaining dining facilities planned. Through the efforts of the Student Government Association (SGA), the student group Environmental Coalition (EC), and Dining Services, progress is underway to promote the use of a reusable bottle.

The Facilities Services Department's University Planning, Design, and Construction Directorate, as part of the LEED certification process, is providing for the recycling of CDD waste for new construction and major renovation projects.

The office of Environmental Health & Safety Services is very active in the electronic waste (e-waste), battery, fluorescent lamp, used motor oil, lamp ballast, and other recycling programs.

3.1.5.3 SPECIAL WASTE SERVICES

The occasional appearance of bio-hazardous wastes in MSW containers serviced by in-house crews or through contract services, and other problematic waste issues, are referred to the Environmental Health & Safety Office.

3.2 OTHER WASTE STREAMS

3.2.1 CONSTRUCTION DEMOLITION AND DEBRIS WASTES

There are currently no active CDD waste facilities located within the Montgomery County planning region. CDD waste is recycled, used as fill, disposed of in inert landfills or disposed of in regional CDD landfills. It is believed that a substantial amount of the CDD waste generated in this planning region is hauled to the Bandy CDD landfill (Roanoke County) or the Ham Sanitary Landfill (Peterstown, WV) for disposal.

As described in Section 2.4.2, it is projected that 1.1 million tons of CDD waste material will be generated within this planning region between 2004 and 2024. Sufficient capacity exists at MRSWA Transfer Station and the NRRA Regional Landfill to continue to handle projected CDD waste tonnages for the planning period should the need arise.

3.2.2 INDUSTRIAL WASTES

Industrial waste is generated by a number of industries located in the planning region, including Corning, Federal Mogul, the Radford Army Ammunition Plant, Wolverine, Hubbell, Rowe Furniture, Tetra, Metal X, Poly Scientific, Electro Tec, C&S Door, Marshall Ready Mix and the Virginia Tech Power Plant.

It is believed that none of these facilities operate their own industrial waste landfills. Therefore, the industrial waste generated at these facilities is either recycled or disposed of at regional MSW landfills.

Of the industrial waste generated annually, data is only available for the ash generated by the Virginia Tech Power Plan (about 12,375 tons per year), fired cullet and dust from Corning (2,100 tons per year) and the portion brought to the Transfer Station (4,900 ton per year in 2008). The materials from the power plant and Corning are direct hauled to the NRRA Regional Landfill and used as alternative daily cover (ADC) whereas the industrial wastes brought to the Transfer Station are mixed with other wastes and then transported to the NRRA landfill for disposal.

As described in Section 2.4.3, it is projected that 368,753 tons of industrial wastes will be generated within the planning region from 2004 to 2024, most of which will be direct hauled to the NRRA landfill. Sufficient capacity exists at MRSWA Transfer Station and the NRRA Regional Landfill to continue to handle projected industrial waste tonnages for the planning period.

3.2.3 REGULATED MEDICAL WASTES

Regulated medical waste is generated by the two major hospitals in the planning region – the Montgomery Regional Hospital and the Carilion New River Valley Hospital. These facilities contract with private medical waste service providers for the management of their regulated medical wastes.

3.3 PUBLIC EDUCATION

MRSWA employs a full-time Education Coordinator and Training Coordinator to oversee the public education and awareness program. The public education and awareness program involves three components:

1. Education
2. Promotion
3. Convenient Recycling Opportunities

Education efforts typically focus on community sectors, including business, industry and youth with the objective of encouraging recycling as a habit. Educational and promotional efforts target all age groups and have two basic goals:

1. Educating the public about solid waste disposal issues.
2. Educating the public about the opportunities for reusing and recycling materials to ultimately reduce landfill tonnages and address waste disposal issues.

Promoting recycling is like promoting any other program, service, or product; it involves: 1) getting the message across as often as possible, 2) placing the message in as many places as possible; 3) communicating the messages in as many ways as possible; and 4) attracting as much positive attention as possible.

The Education Coordinator and Training Coordinator also performs waste audits for companies to encourage recycling. A waste audit entails taking inventory of the

current waste stream produced. Materials that can be recycled are identified along with disposal or transportation options. In a sense, the coordinator performs cost analyses of the company's waste management program. With the information provided, the company can determine the cost of its current waste program as well as identify areas where improvements can be made.

The Education Coordinator and Training Coordinator produces materials and programs to educate the public about MRSWA operation. Printed media is designed to inform the public about solid waste solutions within the solid waste management realm. Proper sorting, upcoming programs and general operating information is covered continuously due to the changes and growth in the region's population.

Programs conducted on or off-site are designed to provide as much information about the operations of the MRF, current environmental issues surrounding solid waste management, source waste reduction, recycling, and alternative methods for landfill disposal. Depending on the group attending the program, each presentation is created with various elements in mind. These include number of people, age range, time frame, and space needed. Students from the schools in the area tour the facility and then are given information that parallels with the Virginia State Standards of Learning. Various activities are used to reinforce topics being discussed. Civic and community groups receive pertinent information including accepted recyclables, upcoming events and answers to any of the group's questions.

All programs and materials promote MRSWA and the efforts being put forth to provide services to address the region's various waste management needs. Information on programs, services, employment, general operational information, and directions to the facility can be found on MRSWA's website: www.mrswa.com

3.4 PUBLIC/PRIVATE PARTNERSHIPS

In 2009, MRSWA joined into a seven year partnership with Green kW Energy, Inc. (GKW) to design, install, and operate a 365 kW renewable power generation facility at the closed Mid County Landfill by capturing landfill gas. Under this partnership, GKW is responsible for system design, permitting, installation and operation in accordance with all applicable rules and regulations.

4.0 HIERARCHY

9VAC20-130-10 *et seq*. of the VSWMR, requires the planning unit develop comprehensive and integrated solid waste management plans that consider, at a minimum, all components of the following hierarchy: (1) source reduction; (2) reuse; (3) recycling, (4) resource recovery (waste-to-energy); (5) incineration; and, (6) landfilling. A general description of each of the components is presented in the sections below.

4.1 SOURCE REDUCTION

The purpose of source reduction is to reduce the amount of waste generated at the point of generation or at the source. Source reduction may mean a change in a method of packaging or a change in a process design to eliminate or reduce waste. In many cases, packaging of a product influences the buyer either to purchase or not to purchase the product. As this is the case, controls will need to be placed on packaging from the state or federal level.

MRSWA promotes source reduction by consulting with local industries and through educational forums with residents as described in Section 3.3 of this plan.

4.2 REUSE

Reuse is the use of a solid waste material that has been separated from the waste material, without processing or changing the materials form, for the same or another end use. Some examples of reusable items are glass, soft drink bottles, bricks, and some wood products.

At this time, there are very few markets for reusable waste products since many waste products cannot be reused until cleaned, disinfected or processed in some way. Additionally, in the majority of cases, a manufacturer uses all new materials when manufacturing a product. However, the MRSWA Recycling Coordinator actively monitors local markets for new possibilities for reuse.

4.3 RECYCLING

Recycling is the process of separating a given waste material from the waste stream and processing it so that it is used again as a raw material for a product, which

may or may not be similar to the original product. Recycling involves the separation of a waste material from the waste stream, collection, processing, marketing, sale, and utilization as a raw material. As described previously, MRSWA has an extensive recycling initiative which is actively promoted to area citizens and businesses. In addition, since the market for recycled materials is in continual flux due to economic forces MRSWA continual evaluates the markets for materials collected at the MRF.

In addition, a variety of private companies exist in the planning region and surrounding areas which assist with recycling needs which are not directly provided by MRSWA. One such company is, Poplar Manor Enterprises (PME), a private composting facility which operates in nearby Riner, Virginia. PME is only the second composting company in the Commonwealth of Virginia to receive a permit from the DEQ to accept large quantities of food and other organic waste. MRSWA is not directly affiliated with PME, however some members of the planning region are and plan to continue using PME's services.

4.4 WASTE-TO-ENERGY/INCINERATION

A resource recovery system, or a waste-to-energy system, is defined as a solid waste management system that provides for collection, separation, recycling, and recovery of energy or solid wastes, including disposal of non-recoverable waste residues. Incineration is defined as the controlled combustion of solid waste for disposal. It is different from resource recovery in that no usable product is generated from the combustion of the waste. The sole purpose of incineration is to burn the waste to reduce the quantity to be managed or disposed.

The two major types of resource recovery facilities are the refuse derived fuel (RDF) facility and the mass burn facility. RDF systems utilize a separation process that divides material that is combustible from material that is non-combustible. The non-combustible material may be collected and sold as a recyclable or reusable product. The combustible material is processed into pellets or fluff (RDF) and sold or used by the manufacturer as a fuel for combustion. Revenue results from the sale of both the non-combustible material, as well as the RDF itself.

Mass burn facilities do not utilize a separation process. All municipal solid waste is directly fed to the incinerator, which burns the waste at a very high temperature. The

resulting heat may be used to generate steam or electricity. It should be noted the mass burn of municipal solid waste results in the production of both air emissions and ash. The air emissions are regulated by state and federal agencies. The ash must be landfilled as a waste. This being the case, the locality must still plan for the disposal of a waste product, although the amount of waste to be disposed will be greatly decreased.

4.5 LANDFILL

As mentioned previously, waste disposal for this planning region is accomplished at the NRRA Regional landfill located near Dublin, VA. At this time, landfilling appears to be the most feasible of the solid waste disposal alternatives for this planning region.

The local governments, residents, businesses and institutions rely, for the most part, on the MRSWA Transfer Station to receive the MSW collected in the region. The MRSWA subsequently transfers and hauls the MSW to the NRRA Regional Landfill for disposal.

5.0 GOALS AND OBJECTIVES

The Montgomery Regional Solid Waste Plan Steering Committee established the following general goals and objectives for solid waste management and planning for the planning region:

1. To protect the public health, safety and welfare of Town of Blacksburg, Town of Christiansburg, Virginia Tech, and Montgomery County residents and the environment.
2. Maintain solid waste disposal services for all residents consistent with available means and resources.
3. Meet all applicable federal and state regulations.
4. Increase community awareness of illegal dumping, litter control efforts, and household hazardous and medical waste.
5. Address current and ongoing monitoring and maintenance needs for the closure and oversight of landfills within the county.
6. Meet the Commonwealth of Virginia's recycling mandates of 25% and exceed these recycling levels where possible and economically feasible.
7. Address each component of the solid waste management hierarchy.

In addition, solid waste management and planning is tied not only to regulatory mandates and operational necessity but also to the Comprehensive Plans for the member jurisdictions. Therefore, the following goals were also endorsed by the Steering Committee specifically address the member's Comprehensive Plans:

1. Encourage recycling and waste minimization as a means of reducing the waste stream and promoting environmental concerns beyond the mandated recycling rates through such mechanisms as tipping fees, composting, expanded drop-off and curbside collection, reuse and exchange opportunities, and other regional programs.
2. Increase flow of recyclables by expanding collection programs and increasing focus on encouraging commercial recycling efforts.
3. Promote source reduction and pollution prevention by commercial, private, and government sectors of the community through proper disposal of medical hazardous waste, legislation, ordinances, public awareness programs, and direct technical assistance to business and industry.
4. Maintain and expand the recycling market options available to the region through the consistent high quality of all materials, which are shipped from the MRSWA Material Recovery Facility; the development and maintenance of superlative relationships with market personnel; and the encouragement and support of local value added utilization of locally recovered materials.
5. Continue and expand programs to educate residents and businesses about source reduction, reuse, recycling, and disposal of solid waste.
6. Continue and expand efforts to implement comprehensive, effective, and environmentally sound waste management programs.
7. Seek to address long-term environmental issues and concerns.
8. Explore new and innovative options for solid waste disposal and recycling.
9. Continue to support the composting initiative within the planning region.

5.1 MRSWA

The Montgomery Regional Solid Waste Authority has adopted the following goals for its solid waste program over the planning period. Also included, are the solid waste and recycling goals achieved between the years of 2004-2009.

Solid Waste Goals:

- Maximize waste stream capture.
- Minimize tipping fees to NRRA; stabilize and/or reduce tipping fees at the transfer station.
- Brush grinding alternatives.
- Landfill gas use project.
- Transfer Station renovations to improve operations (exits, drains, breakroom, office).

Previously Achieved Solid Waste Goals:

- Develop long-term solution for tire disposal.
- Conduct a pilot program for the composting of leaves and grass clippings. (achieved through PME)
- Evaluate the feasibility of sewage sludge composting. (ADC direct haul to NRRA)
- Develop website for MRSWA.

Recycling Goals:

- Sponsor and organize hazardous waste events.
- Small volume pick up service (e-waste, recyclables).
- Large volume pick up service (schools, governmental entities).
- Large volume pick up service (commercial/business).
- Encourage use of Poplar Manor Enterprises (PME).
- Single stream hybrid.

Previously Achieved Recycling Goals:

- Cover financial responsibilities of the recycling processing facility.
- Increase flow.
- Explore new programs such as adding new materials or products for recovery through the MRF to respond to future market conditions.
- Improve quality of incoming and outgoing recyclables.
- Expand the regional program for the management and recycling of electronics wastes and universal wastes.
- Expand industrial recycling programs.

Education Goals

- Continue to expand curriculum for solid waste/recycling/litter; prevention educational materials;
- Continue to explore opportunities available for community outreach;
- Expand educational outreach for commercial recycling programs and include recognition incentives;
- Construct an Education Center;
- Expand opportunities for employee training;
- Interactive website.

5.2 TOWN OF BLACKSBURG

The Town of Blacksburg has adopted the following goals for its solid waste program over the planning period:

Solid Waste Goals:

- Reduce the amount of waste taken to the landfill;
- Increase reuse of materials;
- Educate citizens on options for reduction, reuse, and recycling;
- Limit hazardous materials in the waste stream;

- Educate citizens about identifying hazardous waste & appropriate response measures;
- Continue to work with businesses to increase recycling.

Recycling Goals:

- Continue to work with custodial staff, recycling assistants, and employees to enhance recycling in all buildings;
- Enhance apartment recycling by strengthening ordinance;
- Continue to partner with the YMCA at Virginia Tech to provide electronics recycling for Blacksburg residents;
- Continue to work with Sustainable Blacksburg to improve recycling in Downtown area;
- Research feasibility of volume based pay-as-you-throw program for curbside customers;
- Continue program to promote recycling of fluorescent lamps by businesses;
- Continue recycling program for schools within jurisdictional limits;
- Promote food diversion and organics recycling in partnership with the local Food Bank and PME;
- Continue to work with the MRSWA to expand the types of materials and products that can be recovered for recycling.

Education Goals:

- Continue to educate employees about facilities recycling program;
- Continue to educate citizens about recycling programs available in the area;
- Continue to provide opportunities for groups/organizations to receive information and presentations;
- Continue to publicize recycling through use of the Town's Recycling website, public access television, newsletters and other printed material;

5.3 TOWN OF CHRISTIANSBURG

The Town of Christiansburg has adopted the following goals for its solid waste program over the planning period:

Solid Waste Goals:

- Increase collection efficiency;
- Improve education;
- Continue post closure activities of Christiansburg landfill.

Recycling Goals:

- Expand recycling program;
    - Cardboard
    - Scrap metals
    - Paint exchange
- Reduce hazardous waste;
- Increase collection efficiency;
- Reduce contamination;
- Improve education;
- Continue to work to improve electronics recycling in the region;
- Work with the MRSWA to promote alternatives to landfilling such as composting.

5.4 MONTGOMERY COUNTY

Montgomery County has adopted the following goals for its solid waste program over the planning period.

Solid Waste and Recycling Goals:

- Eliminate or replace the remaining green box site with a consolidated site.

5.5 VIRGINIA TECH

On June 1, 2009, the Virginia Tech Board of Visitors approved "The Virginia Tech Climate Action Commitment (VTCAC) Resolution." The VTCAC Resolution, as well as the accompanying Virginia Tech Climate Action Commitment Sustainability (VTCAC&SP) Plan, was developed by the recently created Energy and Sustainability Committee and approved using the established university governance system. This 14 point VTCAC Resolution establishes goals and objectives that will guide the university in a variety of sustainability endeavors to include recycling and waste minimization. The complete VTCAC Resolution is located at the following website: http://www.facilities.vt.edu/sustainability/climateAction.pdf. Relevant points include the following:

1. Point #5 establishes the Office of Sustainability. This office is within the Facilities Services Department and consists of a Sustainability Program Manager, an Energy Manager, and a Graduate Assistant with all reporting to the Chief of Staff. This office oversees recycling policy.

2. Point #6 states: "Virginia Tech will pursue LEED Silver certification or better…for all new buildings and major renovations." Capturing CDD waste for reuse and recycling is a key component of achieving that goal.

3. Point #8 states: "The University will adopt at least four reduction measures in the waste minimization component of the national Recyclemania competition. Virginia Tech Recycling (renamed Virginia Tech Waste Management) will adopt a goal of a 35% recycle rate by 2012 and 50% by 2025."

Virginia Tech is in the process of developing a comprehensive, university-specific, solid waste management plan. This plan will include current procedures along with potential areas for recycling and waste reduction expansion and improvement. The plan will outline both short and long term university waste reduction goals for the next twenty years.

Virginia Tech has adopted the following goals for its solid waste and recycling programs over the planning period.

Solid Waste Goals:

- Improve collection efficiency
- Standardize exterior refuse receptacles.
- Continue to enhance the outstanding partnership with MRSWA and members.

Recycling Goals:

- Achieve the Virginia Tech Climate Action Commitment Resolution goal of a 35% recycling rate by 2012, and a 50% recycling goal by 2025.
- Develop a comprehensive recycling program that includes a standardization of recycling methods and containers across campus.
- Improve collection efficiency and reduce collection costs.
- Capture CDD waste for reuse and recycling to support LEED.
- Expand composting to all university dining facilities and other appropriate facilities with Poplar Manor Enterprises (PME), a private compost and collection company.
- Continue to support efforts for a regional and Virginia Tech composting facility.
- Continue to enhance the outstanding partnership with MRSWA and other members.
- Coordinate with MRSWA, or develop independent programs, for capturing specialized recyclables (i.e., E-waste, toner cartridges).
- Continue participation in "RecycleMania," the friendly national-level competition for college and university recycling programs to promote waste reduction activities on campus.
- Continue to explore opportunities to participate in Special Event E-Waste programs.
- Work with the Athletic Department to explore opportunities to enhance recycling at athletic venues.

6.0 GOAL IMPLEMENTATION

The hierarchy items currently implemented by the member jurisdiction will continue to be implemented. All of the member jurisdictions plan to continue to utilizing the MRSWA Transfer Station for MSW transfer and disposal services and the MRSWA MRF for processing and sale of the majority of the recyclable materials throughout the planning period. The implementation schedule and strategies for implementation planned for each of the systems and services identified for implementation during the planning period are presented in Table 8 and discussed in the following sections.

6.1 MRSWA

MRSWA's plans within the next five years are as follows:

- Sponsor and Organize Spring and Fall Household Hazardous Waste events;
- Feasibility Study and Implementation of Small Volume Pick-up Service (E-Waste and Recyclables);
- Feasibility Study and Implementation of Large Volume Pick-up Service (Schools and Governmental Entities);
- Feasibility Study and Implementation of Large Volume Pick-up Service (Commercial/Business);
- Support Poplar Manor Enterprises (PME);
- Feasibility Study of Single Stream Hybrid Options;
- Feasibility Study for Expansion of Plastic Recycling to Include #3 through #7 Plastics.

Depending on the outcome of these studies, future investments in capital purchases and operating costs may be required on the part of MRSWA. MRSWA will fund future capital purchases through green revenue which is generated by the selling of landfill gas destruction credits (carbon credits) and revenue generated from an on-site gas-to-electric generating unit. MRSWA will fund future operating costs through general operating funds. The outcome of implementing these services and operational modifications would be a substantial increase in the region's recycling rate.

6.2 TOWN OF BLACKSBURG

The Town of Blacksburg plans to accomplish the following in the next five years:

- Enhance apartment recycling by strengthening the ordinance and continuing to provide assistance to apartment managers;
- Investigate the feasibility of a volume based pay-as-you-throw system for curbside customers;
- Investigate the feasibility of providing composting for curbside customers through contract with PME;

6.3 TOWN OF CHRISTIANSBURG

The Town of Christiansburg plans to continue to provide its current solid waste and recycling services. However, it has plans to evaluate the implementation of a curbside recycling program during the planning period.

6.4 MONTGOMERY COUNTY

Montgomery County plans to continue the conversion of its green box collection system to a system of consolidated collection sites. The County plans to make the investment in these additional compactors within the next five years and will pay for these investments with monies from the County's General Fund.

6.5 VIRGINIA TECH

Virginia Tech will utilize PME for institutionally generated food waste, consider utilizing PME for yard/landscape waste generated on campus, and consider utilizing PME for post-consumer waste generated by students, staff, and faculty in the future.

In addition, Virginia Tech has indicated a desire to support the development of a regional composting facility by the MRSWA in the event that PME is no longer available to serve the composting needs of the region. Support is limited to political support and technical expertise, but will not involve the investment of capital funds.

Table 8 – Implementation Schedule and Strategies for Solid Waste Systems and Services Identified For Implementation During the Planning Period			
Jurisdiction	**System or Service**	**Schedule**	**Funding Sources**
MRSWA	Sponsor and Organize Spring and Fall Household Hazardous Waste events	2010-2011	MRSWA Operating Budget
MRSWA	Feasibility Study and Implementation of Small Volume Pick-up Service (E-Waste and/Recyclables)	2010-2015	Green Revenue/ MRSWA Operating Budget
MRSWA	Feasibility Study and Implementation of Large Volume Pick-up Service (Schools/ Governmental Entities)	2010-2015	Green Revenue/ MRSWA Operating Budget
MRSWA	Feasibility Study and Implementation of Large Volume Pick-up (Commercial/Business)	2010-2015	Green Revenue/ MRSWA Operating Budget
MRSWA	Support Poplar Manor Enterprises (PME)	2010-2015	N/A
MRSWA	Feasibility Study of Single Stream Hybrid Options	2010-2015	Green Revenue/ MRSWA Operating Budget
MRSWA	Feasibility Study for Expansion of Plastic Recycling to Include #3 through #7 Plastics	2010-2015	Green Revenue/ MRSWA Operating Budget
Town of Blacksburg	Apartment Recycling	2009-2015	N/A
Town of Christiansburg	Evaluate the implementation of a curb side recycling program	2009-2023	To be determined
Montgomery County	Eliminate or replace with attended consolidated site the last remaining unattended site.	2010-2015	County General Fund
Virginia Tech	Support of MRSWA Regional Composting Center initiative	2009-2023	N/A
Virginia Tech	Support PME for Composting Services	2009-2023	N/A

7.0 PUBLIC PARTICIPATION

7.1 PUBLIC/PRIVATE PARTNERSHIPS

The Towns of Blacksburg and Christiansburg, Montgomery County, and Virginia Tech also provide continuing education and promotional information. Each jurisdiction has a web site with information about programs and the waste hierarchy. Further, all jurisdictions promote and encourage participation in:

1. Adopt-a-Stream,
2. Adopt-a-Highway,
3. Adopt-a-Spot, and
4. Adopt-a-Park.

The Virginia Department of Transportation provides substantial assistance to and oversees the Adopt-a-Highway program.

The Adopt-a-Spot program is modeled after the familiar Adopt-a-Highway program. Participants may adopt a mile or more of a street, park, walking/bike paths, green box sites, bus stops, and other public areas. Similar to the Adopt-a-Highway program a sign displays the person or group responsible for the "Spot." Program requirements include:

1. Participation through the program coordinator,
2. A minimum of four clean-ups per year; two of which are statewide clean-up days, and
3. Participation in a meeting on safety concerns and conditions.

Adopt-a-Stream was initiated by the Izaak Walton League, (Inc.) and has been ongoing since fall 1990. Coordination continues through the IWL; there is no incentive program in support of Adopt-a-Stream, although Town and County personnel will assist with efforts on a case-by-case basis.

7.2 PUBLIC HEARINGS

A public hearing was held by MRSWA on July 15, 2004, in accordance with the public participation requirements outlined in 9VAC20-130-130. A copy of the notice published in the local newspaper and the minutes of the public hearing are provided in Appendix IV. MRSWA did not receive any comments from the public during the public hearing.

7.3 RESOLUTIONS

A copy of the MRSWA's resolution adopting this Solid Waste Management Plan is provided in Appendix V.

8.0 SUMMARY

The purpose of this solid waste management plan is to provide the planning region comprised of the Towns of Blacksburg, and Christiansburg, Montgomery County, and Virginia Tech with goals for the long-term management of solid waste. For the solid waste management plan to succeed, the full participation of all of the residents, businesses, and industries of the planning region must be obtained. The MRSWA will continue, on behalf of and with the assistance of its member jurisdictions and institutions to institute an aggressive program to promote recycling and reuse to local residents, as well as provide education materials to residents and schools educating them on the benefits of recycling. Based on calendar year 2008 information, the planning region achieves a 26.6% municipal solid waste recycling rate. When recycled materials from other waste streams are considered, a recycling rate of 27.1% has been documented for the region.

The MRSWA Material Recovery Facility produces recycled materials of the highest quality that can be competitively marketed to regional and national recycling markets.

The MRSWA Transfer Station, when coupled with the NRRA Regional Landfill, has the capacity to provide for secure and controlled MSW disposal for the region throughout the 20 year planning period and beyond.

The fact that the NRRA Regional Landfill is publicly-owned and controlled means that its life will not be shortened due to the opportunities for increased revenues created by the disposal service marketplace. In addition, the public board that oversees the landfill has a direct

say in the types of wastes disposed of at the landfill and the rate of filling allowed at the landfill. This public control translates into lower MSW disposal risks to the MRSWA and its members.

In addition to the MRSWA facilities, the planning region will continue to rely on the facilities and services of private sector companies for the management of construction and demolition wastes, industrial wastes and regulated medical wastes. The private sector also plays a key role in the management and processing of special wastes such as waste oil, used batteries, white goods, and discarded tires.

The additional services that will be implemented and/or evaluated as a result of this plan will serve to strengthen and refine the integrated solid waste management system that is already in place.

With these additional services, and with the continued involvement of the private sector, the planning region should continue to be served by an effective and secure solid waste management system - that complies with State goals and achieves local objectives - over the next twenty years.

END OF PLAN

APPENDIX I

List of Steering Committee Members

Solid Waste Management Plan Steering Committee		
Jurisdiction/Organization	**Representative**	**Title**
Town of Blacksburg	Susan Garrison	Environmental Sustainability Manager
Town of Christiansburg	Barry Helms	Assistant Town Manager
Montgomery County	Ron Bonnema	County Engineer
	David Breeden	Asst. General Services Manager
MRSWA	Alan Cummins	Executive Director
	Jim Ketterer	Director of Recycling Services
	Teresa Sweeney	Education & Training Coordinator
Virginia Tech	Denny Cochrane	Sustainability Program Manager

APPENDIX II

List of Solid Waste Permits Issued by DEQ in Montgomery County

All Solid Waste Facilities in Virginia

* Developed from DEQ's "Solid Waste Database" last updated October 1, 2007.

West Central Regional Office

Facility Name (Permit Number): Blue Ridge Disposal Incorporated (PBR104) Status: Active

Type: Materials Recovery Facility [SW]
County: Montgomery County
Site Location : 205 Scattergood Dr
Loc. Address : 205 Scattergood Dr
Christiansburg
VA24073

Region : West Central Regional Office
Telephone :

Contact Name : Paul Curtis
Mail Address: 205 Scattergood Dr
Christiansburg
VA - 24073

Facility Name (Permit Number): Brookman Landfill #2 (SWP262) Status: Closed

Type: Closed Sanitary Landfill [SW]
County: Montgomery County
Site Location :
Loc. Address :

Region : West Central Regional Office
Telephone :

Contact Name :
Mail Address: PO Box 806
Christiansburg
VA - 24073

Facility Name (Permit Number): Christiansburg Town - Landfill (SWP057) Status: Closed

Type: Closed Sanitary Landfill [SW]
County: Montgomery County
Site Location :
Loc. Address :

Region : West Central Regional Office
Telephone : 5403826128

Contact Name : Barry Helms
Mail Address: PO Box 599
Christiansburg
VA - 24073

Facility Name (Permit Number): Christiansburg Town - Landfill (SWP452) Status: Post-Closure

Type: Closed Sanitary Landfill [SW]
County: Montgomery County
Site Location :
Loc. Address :

Region : West Central Regional Office
Telephone : 5403826128

Contact Name : Barry Helms
Mail Address: PO Box 599
Christiansburg
VA - 24073

Facility Name (Permit Number): HCMF Heritage Hall-Blacksburg (PBR303) Status: Closed

Type: RMW Storage Facility [SW]
County: Montgomery County
Site Location :
Loc. Address :

Region : West Central Regional Office
Telephone :

Contact Name :
Mail Address: 1480 South Main Street
Blacksburg
VA - 24060

Facility Name (Permit Number): HCMF Heritage Hall-Blacksburg (PBR304) Status: Closed

Type: RMW Storage Facility [SW]
County: Montgomery County
Site Location :
Loc. Address :

Region : West Central Regional Office
Telephone :

Contact Name :
Mail Address: 1480 South Main Street
Blacksburg
VA - 24060

Facility Name (Permit Number): HCMF Heritage Hall-Blacksburg (PBR306) Status: Closed

Type: RMW Storage Facility [SW]
County: Montgomery County
Site Location :
Loc. Address :

Region : West Central Regional Office Contact Name :
Telephone :

Mail Address: 1480 South Main Street
Blacksburg
VA - 24060

Facility Name (Permit Number): Intermet Radford Foundry (SWP407) Status: Closed

Type: Closed Industrial Landfill [SW]
County: Montgomery County
Site Location : 1605 and 1701 W Main St
Loc. Address : 1605 W Main St
Radford
VA24141

Region : West Central Regional Office Contact Name : Jeremy Flint
Telephone : 5407319189

Mail Address: 1605 W Main St
Radford
VA - 24141

Facility Name (Permit Number): Intermet Radford Foundry (GW355) Status:

Type: Industrial Landfill [SW]
County: Montgomery County
Site Location : 1605 and 1701 W Main St
Loc. Address : 1605 W Main St
Radford
VA24141

Region : West Central Regional Office Contact Name : Jeremy Flint
Telephone : 5407319189

Mail Address: 1605 W Main St
Radford
VA - 24141

Facility Name (Permit Number): Intermet Radford Foundry (SWP355) Status: Inactive

Type: Industrial Landfill [SW]
County: Montgomery County
Site Location : 1605 and 1701 W Main St
Loc. Address : 1605 W Main St
Radford
VA24141

Region : West Central Regional Office Contact Name : Jeremy Flint
Telephone : 5407319189

Mail Address: 1605 W Main St
Radford
VA - 24141

Facility Name (Permit Number): Intermet Radford Foundry (SWP361) Status: Closed

Type: Closed Industrial Landfill [SW]
County: Montgomery County
Site Location : 1605 and 1701 W Main St
Loc. Address : 1605 W Main St
Radford
VA24141

Region : West Central Regional Office Contact Name : Jeremy Flint
Telephone : 5407319189

Mail Address: 1605 W Main St
Radford
VA - 24141

Facility Name (Permit Number): Montgomery County - Landfill (SWP177) Status: Post-Closure

Type: Closed Sanitary Landfill [SW]
County: Montgomery County
Site Location : across the street from MRSWA
Loc. Address :

Region : West Central Regional Office Contact Name : Ronald Bonnema
Telephone : 5403942090

Mail Address: 755 Roanoke St Ste 1C
Christiansburg
VA - 24073 3172

Facility Name (Permit Number): Montgomery County of -Brushy Mountain Landfill (SWP039) Status: Closed

Type: Closed Sanitary Landfill [SW]
County: Montgomery County
Site Location :
Loc. Address :

Region : West Central Regional Office
Telephone :

Contact Name :
Mail Address: PO Box 806
Christiansburg
VA - 24073

Facility Name (Permit Number): Montgomery Regional Solid Waste Authority (PBR149) Status: Active

Type: Transfer Station [SW]
County: Montgomery County
Site Location :
Loc. Address : 555 County Dr
Christiansburg
VA24073

Region : West Central Regional Office
Telephone : 5403812820

Contact Name : Randall Bowling
Mail Address: P O Box 2130
Christiansburg
VA - 24068

Facility Name (Permit Number): Montgomery Regional Solid Waste Authority (PBR169) Status: Active

Type: Materials Recovery Facility [SW]
County: Montgomery County
Site Location :
Loc. Address : 555 County Dr
Christiansburg
VA24073

Region : West Central Regional Office
Telephone : 5403812820

Contact Name : Randall Bowling
Mail Address: P O Box 2130
Christiansburg
VA - 24068

Facility Name (Permit Number): Montgomery Regional Solid Waste Authority (SWP397) Status: Post-Closure

Type: Closed Sanitary Landfill [SW]
County: Montgomery County
Site Location :
Loc. Address : 555 County Dr
Christiansburg
VA24073

Region : West Central Regional Office
Telephone : 5403812820

Contact Name : Randall Bowling
Mail Address: P O Box 2130
Christiansburg
VA - 24068

Facility Name (Permit Number): Radford Army Ammunition Plant (PBR179) Status: Active

Type: Energy Recovery/Incineration Facility [SW]
County: Montgomery County
Site Location : Rt 114 3 Mi NE Radford
Loc. Address : Peppers Ferry Rd
Radford
VA24141

Region : West Central Regional Office
Telephone : 5406398266

Contact Name : Carolyn Jake
Mail Address: P O Box 1
Radford
VA - 24141 0100

Facility Name (Permit Number): VPI & SU - Solid Waste Management Facilities (SWP248) Status: Closed

Type: Closed Sanitary Landfill [SW]
County: Montgomery County
Site Location :
Loc. Address : Intersection of Prices Fork Rd and Route 4
Blacksburg
VA24060

Region : West Central Regional Office
Telephone : 5402312510

Contact Name : Robert Lowe
Mail Address: 459 Tech Center Dr
Blacksburg
VA - 24061

Facility Name (Permit Number): VPI & SU - Solid Waste Management Facilities (PBR305) Status: Closed

Type: RMW Steam Sterlizer [SW]
County: Montgomery County
Site Location :
Loc. Address : Intersection of Prices Fork Rd and Route 4
Blacksburg
VA24060

Region : West Central Regional Office
Telephone : 5402312510

Contact Name : Robert Lowe
Mail Address: 459 Tech Center Dr
Blacksburg
VA - 24061

Facility Name (Permit Number): VPI & SU - Solid Waste Management Facilities (SWP109) Status: Post-Closure

Type: Closed Sanitary Landfill [SW]
County: Montgomery County
Site Location :
Loc. Address : Intersection of Prices Fork Rd and Route 4
Blacksburg
VA24060

Region : West Central Regional Office
Telephone : 5402312510

Contact Name : Robert Lowe
Mail Address: 459 Tech Center Dr
Blacksburg
VA - 24061

Facility Name (Permit Number): VPI & SU - Solid Waste Management Facilities (SWP185) Status: Clean Closed

Type: Energy Recovery/Incineration Facility [SW]
County: Montgomery County
Site Location :
Loc. Address : Intersection of Prices Fork Rd and Route 4
Blacksburg
VA24060

Region : West Central Regional Office
Telephone : 5402312510

Contact Name : Robert Lowe
Mail Address: 459 Tech Center Dr
Blacksburg
VA - 24061

APPENDIX III

Solid Waste Data and Projections

Table I. Montgomery County Planning Region - Solid Waste and Recycling Data for Calendar Year 2008

Description	Generated (Tons)	Recycled (Tons)	Disposed (Tons)	Recycle Rate	Per Capita Generation Rates (Lbs/Person/Day) Calculated for 2008	Previously Calc. or Published	Notes
Recycling Rate Calculation:							
1. Determining Base Recycling Rate							
Municipal Solid Waste	87,420.50	23,242.50	64,178.00	**26.6%**	5.36	N/A	1
PRMs							
Recyclable Matls.		15,512.5					
Yard Waste		1,861.0					
Waste Wood		3,366.0					
Textiles		877.0					
Tires		527.0					
Used Oil		475.0					
Used Oil Filters		16.0					
Used Antifreeze		24.0					
Batteries		310.0					
Electronics		79.0					
Abandoned Autos		-					
Other		195.0					
2. Credit Calculations							
Total Credits = Recycling Residue + Non-MSW Recycled + Solid Waste Reuse							
Recycling Residue							
Non-MSW Recycled							
Reused							
Construction Waste		-					
Demolition Waste		-					
Debris Waste		110.00					
Other		536.00					
3. Adjusted Recycling Rate (ARR)				**27.1%**			
ARR = (PRMs + Credits)/(PRMs+Credits+MSW Disp.)							
4. Adjusted Recycling Rate #2 (AAR#2)		**N/A**					
ARR#2 = ARR + 2%							
Other Wastes Generated in Planning Region							
CDD	12,851				0.79	3.20	2
Industrial	19,406				1.19	- - -	3
Regulated Medical Waste	1,141				- - -	.07	4
Sludges	2,252				0.14	0.18	5
White Goods	162				0.01	0.02	6

1. Data compiled from the 2008 Locality Recycling Report developed by the MRSWA.
   The 2008 County population estimated to be 89,318 persons from Table 2 of the SWMP.
2. The CDD per capita generation rate for 2008 was calculated to be 0.79 lb/person/day which is low compared to the published generation rate. The published CDD generation rate is based on EPA estimate for US of 3.2 lb/person/day from report titled "Estimating 2003 Building-Related Construction and Demolition Amounts". The published rate was used for waste projections in Table 5 of the SWMP.
3. Industrial Waste includes waste accepted at Transfer Station (4,931 tons) and ashes from Virginia Tech Power Plant (12,375 tons) and Corning (2,100 tons) which were direct hauled to the NRRA Regional Landfill. The calculated rate was used in for waste projections in Table 5 of SWMP.
4. Regulated medical waste assumed to equal 1.2% of MSW generation rate which is approximatly 0.07 lb/person/day.
5. In 2008, SWIA reports indicated 2,252 tons of sludges were received by MRSWA indicating a generation rate of 0.14 lb/person/day, which was low compared to previous years. Therefore, the average per capita rate for years 04-08 was calculated to be 0.18 lb/person/day and was used for waste projections in Table 5 of the SWMP.
6. In 2008, SWIA reports indicated that 162 tons of white goods were received by MRSWA resulting in a generation rate of 0.01 lb/person/day, which is low compared to previous years. Therefore, the average per capita rate for years 04-08 was calculated to be 0.02 lb/person/day and was used in waste stream projections in Table 5 of the SWMP.

Table II. Blacksburg - Solid Waste and Recycling Data for Calendar Year 2008

Waste Types	Generated (Tons)	Recycled (Tons)	Disposed (Tons)	Recycle Rate	Per Capita Generation Rate (Lbs/Person/Day)	Notes
1. Base Recycling Rate						
Municipal Solid Waste	12,419.84	7,510.00	4,909.84	**60.5%**	1.88	1
PRMs						
Recyclable Matls.		2,888.00				
Yard Waste		919.00				
Waste Wood		2,425.00				
Textiles		877.00				
Tires		21.00				
Used Oil		178.00				
Used Oil Filters		3.00				
Used Antifreeze		14.00				
Batteries		90.00				
Electronics		18.00				
Abandoned Autos		0.00				
Other		77.00				
2. Credit Calculations						
Total Credits = Recycling Residue + Non-MSW Recycled + Solid Waste Reuse						
Recycling Residue						
Non-MSW Recycled						
Reused						
Construction Waste		-				
Demolition Waste		-				
Debris Waste		-				
Other		467.00				
3. Adjusted Recycling Rate (ARR)				**61.9%**		
ARR = (PRMs + Credits)/(PRMs+Credits+MSW Disp.)						
4. Adjusted Recycling Rate #2 (AAR#2)		**N/A**				
ARR#2 = ARR + 2%						

1. Data compiled from the Locality Recycling Report For Calendar Year 2008 developed by MRSWA and from scale data. The 2008 Town population estimated to be 36,247 persons.

Table III. Town of Christiansburg - Solid Waste and Recycling Data for Calendar Year 2008

Waste Types	Generated (Tons)	Recycled (Tons)	Disposed (Tons)	Recycle Rate	Per Capita Generation Rate (Lbs/Person/Day)	Notes
1. Base Recycling Rate						
Municipal Solid Waste	13,917.48	4,573.00	9,344.48	**32.9%**	4.21	1
PRMs						
Recyclable Matls.		3,841.00				
Yard Waste		70.00				
Waste Wood		-				
Textiles		-				
Tires		73.00				
Used Oil		272.00				
Used Oil Filters		12.00				
Used Antifreeze		10.00				
Batteries		207.00				
Electronics		2.00				
Abandoned Autos		-				
Other		86.00				
2. Credit Calculations						
Total Credits = Recycling Residue + Non-MSW Recycled + Solid Waste Reuse						
Recycling Residue						
Non-MSW Recycled						
Reused						
Construction Waste		-				
Demolition Waste		-				
Debris Waste		-				
Other		-				
3. Adjusted Recycling Rate (ARR)				**32.9%**		
ARR = (PRMs + Credits)/(PRMs+Credits+MSW Disp.)						
4. Adjusted Recycling Rate #2 (AAR#2)		**N/A**				
ARR#2 = ARR + 2%						

1. Data compiled from the Locality Recycling Report For Calendar Year 2008 developed by the MRSWA.
   The 2008 Town population estimated to be 18,100 persons.

Table IV. Virginia Tech - Solid Waste and Recycling Data for Calendar Year 2008

Waste Types	Generated (Tons)	Recycled (Tons)	Disposed (Tons)	Recycle Rate	Per Capita Generation Rate (Lbs/Person/Day)	Notes
1. Base Recycling Rate						
Municipal Solid Waste	6,287.36	1,522.48	4,764.88	**24.2%**	3.84	1
PRMs						
Recyclable Matls.		1,042.14				
Yard Waste		390.00				
Waste Wood		30.32				
Textiles		-				
Tires		5.77				
Used Oil		8.85				
Used Oil Filters		0.60				
Used Antifreeze		-				
Batteries		10.46				
Electronics		15.21				
Abandoned Autos		-				
Other		19.13				
2. Credit Calculations						
Total Credits = Recycling Residue + Non-MSW Recycled + Solid Waste Reuse						
Recycling Residue						
Non-MSW Recycled						
Reused						
Construction Waste		-				
Demolition Waste		-				
Debris Waste		-				
Other		69.31				
3. Adjusted Recycling Rate (ARR)				**26.8%**		
ARR = (PRMs + Credits)/(PRMs+Credits+MSW Disp.)						
4. Adjusted Recycling Rate #2 (AAR#2)				**28.8%**		
ARR#2 = ARR + 2%						

1. Data compiled from the 2008 Locality Recycling Reports developed by MRSWA and VT and MRSWA scale data.
   2008 On-campus population estimated to be 8,970 persons from Table 2 of SWMP.

Table V. Montgomery County- Solid Waste and Recylcing Data for Calendar Year 2008

Waste Types	Generated (Tons)	Recycled (Tons)	Disposed (Tons)	Recycle Rate	Per Capita Generation Rate (Lbs/Person/Day)	Notes
1. Base Recycling Rate						
Municipal Solid Waste	16,605.30	3,183.00	13,422.30	**19.1%**	3.50	1
PRMs						
Recyclable Matls.		3,168.00				
Yard Waste		0.00				
Waste Wood		0.00				
Textiles		0.00				
Tires		0.00				
Used Oil		15.00				
Used Oil Filters		0.00				
Used Antifreeze		0.00				
Batteries		0.00				
Electronics		0.00				
Abandoned Autos		0.00				
Other		0.00				
2. Credit Calculations						
Total Credits = Recycling Residue + Non-MSW Recycled + Solid Waste Reuse						
Recycling Residue						
Non-MSW Recycled						
Reused						
Construction Waste		-				
Demolition Waste		-				
Debris Waste		-				
Other		-				
3. Adjusted Recycling Rate (ARR)				**19.1%**		
ARR = (PRMs + Credits)/(PRMs+Credits+MSW Disp.)						
4. Adjusted Recycling Rate #2 (AAR#2)		N/A				
ARR#2 = ARR + 2%						

1. Data compiled from the 2008 Locality Recycling Report developed by MRSWA and MRSWA scale data.
   The 2008 County population estimated to be 26,001 persons from Table 2 of SWMP.

APPENDIX IV

Public Hearing Notice and Minutes

The Roanoke Times
Roanoke, Virginia
Affidavit of Publication

New River Current

MONTGOMERY REG. SOLID WASTE
PO BOX 2130
CHRISTIANSBURG VA 24068

REFERENCE: 80038666
02695988 Public Hearing

State of Virginia
City of Roanoke

I, (the undersigned) an authorized representative of the Times-World Corporation, which corporation is publisher of the Roanoke Times, a daily newspaper published in Roanoke, in the State of Virginia, do certify that the annexed notice was published in said newspapers on the following dates:

City/County of Roanoke, Commonwealth/State of Virginia. Sworn and subscribed before me this 11th day of July 2004. Witness my hand and official seal.

Shari B Love Notary Public
My commission expires 7-31-04.

PUBLISHED ON: 06/27 07/04

TOTAL COST: 93.60
FILED ON: 07/07/04

NOTICE OF PUBLIC HEARING

The Montgomery Regional Solid Waste Authority (MRSWA) will hold a Public Hearing to solicit oral and written comments regarding the 2004 Regional Solid Waste Management plan for Montgomery County, the Towns of Blacksburg and Christiansburg, Virginia Polytechnic and State University, and the MRSWA. The Public Hearing will be conducted by the MRSWA in the administration building located at 555 Authority Drive, Christiansburg, Va. at 1:30 P. M. on July 15, 2004. A copy of the plan will be available for review on June 23, 2004 at the following locations:

Blacksburg Municipal Building office of the Town Manager
Blacksburg Library
Blacksburg Recreation Center
Christiansburg Municipal Building office of the Town Manager
Christiansburg Library
Montgomery County Administration Building office of the County Engineer
VPI&SU office of the Solid Waste Coordinator
MRSWA Administration Building and
on the internet at:
www.olver.com

Comments regarding the Plan should be submitted in writing to the MRSWA at P.O. Box 2130, Christiansburg, Virginia 24068 by July 16, 2004.
(2695988)

Authorized Signature: Tina A McEntire, Billing Services Representative

MINUTES OF MEETING
MONTGOMERY REGIONAL SOLID WASTE AUTHORITY
July 15, 2004

Chairman Joseph V. Gorman, Jr. called the meeting to order at 1:30 p.m. in the conference room of the Authority's Recycling Center Building. Present throughout the meeting were Authority Board members Joseph V. Gorman, Jr., F. Spencer Hall, Adele P. Schirmer, R. Lance Terpenny and L. Allen Bowman. Also present throughout the meeting were Executive Director Randall D. Bowling, Robert Roberts of Olver Engineering, Authority Counsel Paul C. Jacobson and Town of Blacksburg employee Susan Garrison.

The Chairman declared the existence of a quorum. The next item on the agenda was amendments to the agenda. Mr. Bowling asked that Flexible Spending Account Resolution be added as item 5a, and as so amended the previously distributed agenda was affirmed.

The next item on the agenda was Public Hearing on Solid Waste Management Plan. It was noted that proper advertisement had occurred in the Roanoke Times, Current Edition to fulfill legal requirements for the hearing and that publication also occurred in the Christiansburg News Messenger. The Chairman opened the public hearing and asked if any members of the public desired to speak. No members of the public desired to speak, and the public hearing was closed. It was discussed that the formal comment period would close on July 16, 2004 and that if any written comments were received the Board would review them at the August, 2004 meeting and consider them, but that if no comments were submitted then the Board desired the Regional Solid Waste Management Plan dated June 23, 2004 to be adopted in its present form. With this understanding, upon motion of Mr. Hall, seconded by Mr. Bowman, all members of the Board voted in favor of the following resolution:

> Be it resolved that the Board of the Montgomery Regional Solid Waste Authority, an Authority created in accordance with the Virginia Water and Waste Authorities Act, by a unanimous vote at its July 15, 2004 meeting adopted the Regional Solid Waste Management Plan dated June 23, 2004.

The next item on the agenda was approval of the minutes of the meeting of June 10, 2004. Mr. Bowman moved that the minutes of June 10, 2004 be approved as presented. Ms. Schirmer seconded the motion, which passed unanimously.

The next item on the agenda was the Executive Director's report. Mr. Bowling discussed the balance of funds in Authority bank accounts and interest earnings during the month of June, 2004. Mr. Bowling reported that the Authority received a Risk Management Performance Award on June 18 from the Virginia Municipal League Insurance Programs because the Authority did not file any property claims during fiscal year 2002-2003. He noted that he and Tim Myers, along with Fred Hilliard of NRRA, met with representatives of AERC, a company that recycles electronic equipment, to discuss the Authority becoming a regional drop off or contracting agent for e-waste materials. Also, Mr. Bowling and others met with DEQ representatives in Richmond on June 24 to discuss permitting requirements for the Authority to become a handler of e-waste materials. Mr. Bowling discussed the trailers and tire shredder parked on Authority property by the tire processor from Galax discussed in a previous Board meeting, and that he would review how to have this equipment removed from Authority property. He reported that the Authority is now receiving pallets, aluminum cans and PET soda from the Wytheville Pepsi Cola plant for product destruction and recycling. Mr. Bowling noted that the Authority has been selling greater amounts of mulch which are sufficient to cover operating expenses and debt service on the mulch operation. He discussed personnel matters, including the need to replace a buyback employee who resigned and full time recycling site employee. Mr. Bowling reported on the activities of Recycling Coordinator Teresa Sweeney, who conducted two programs at Camp Timberidge in June, and who met with Town of Blacksburg employees to discuss options for advertising available recycling services to apartment dwellers. She also met with Mr. Hilliard of the NRRA to discuss planning for the proposed New River Valley area education workshop.

Mr. Bowling then reported on recycling processing and sales results for the month of June, 2004. Aluminum and copper metal prices were stable. The Authority shipped one load of aluminum cans during the month. Ferrous metal prices were stable, with 14 loads of white good shipped in June. Three loads of glass were shipped. Plastic resin prices were stable, and one combination load of PETE was sold. Paper prices were also stable, with 10 OCC loads shipped in June and 8 loads of ONP shipped. One load of SOP was sold and one load of magazines was shipped. Mr. Bowling distributed June revenue and expense statements. Mr. Bowling also reported on Facility Throughput and Baler Activity and distributed colored charts reflecting these items.

The next item on the agenda was Flexible Spending Account Resolution. Mr. Bowling explained that two new members have been added to the New River Valley Consortium, that an amended "cafeteria" benefit plan has been adopted by the Consortium and that the health care flexible-spending reimbursement amount has been raised to $5000 per year. The Consortium requires the Authority to approve the amended cafeteria plan and provided a form of Authority resolution to accomplish this. Upon motion of Mr. Terpenny, seconded by Mr. Hall, all Board members voted in favor of the following resolution:

RESOLVED, that the form of amended Cafeteria plan including a Dependent Care Assistance Program and Health Care Reimbursement Plan effective July 1, 2004, presented to this meeting is hereby approved and adopted and that the duly authorized agents of the Employer are hereby authorized and directed to execute and deliver to the Administrator of the Plan one or more counterparts of the Plan.

RESOLVED, that the Administrator shall be instructed to take such actions that are deemed necessary and proper in order to implement the Plan, and to set up adequate accounting and administrative procedures to provide benefits under the plan.

RESOLVED, that the duly authorized agents of the Employer shall act as soon as possible to notify each employee a copy of the summary description of the Plan in the form of the Summary Plan Description presented to this meeting, which form is hereby approved.

The next item on the agenda was approval of bills to be paid. After discussion, Mr. Terpenny moved that that the bills be approved as presented. Mr. Bowman seconded the motion, which passed unanimously.

The next item on the agenda was the report on the New River Resource Authority. Mr. Hall reported that NRRA operations were proceeding without major problems.

The next item on the agenda was Mulch Facility Status Report. Mr. Bowling reported that the project should be complete on July 16.

The next item on the agenda was Landfill Gas Utilization Update. Mr. Bowling indicated that the gas seal previously discussed is still being manufactured and that there is no new information on a potential customer for landfill gas discussed at the last meeting.

The next item on the agenda was Baler Acquisition Status. Mr. Bowling reported that delivery and installation of the baler was not expected until mid to late August. Mr. Jacobson reminded Mr. Bowling to seek a time extension of the letter of credit from the baler manufacturer, due to the delay in the manufacturing process, in order to avoid the need to draw on the letter of credit if only minor issues needed to be worked out after installation of the equipment.

The next item on the agenda was determination of time and place of next meeting. The Board unanimously agreed that the next Authority Board meeting would occur on August 12, 2004 at 1:30 p.m. at the Authority's Recycling Facility meeting room. It was discussed that the Authority's Annual Dinner would be held in a few hours at 6:00 p.m. at the Farmhouse Restaurant in Christiansburg, but that no Authority business would be discussed or transacted at that time. There being no further business, the meeting was adjourned.

Accepted:

J.V. Gorman Jr. 8/12/04

Chairman Date

[signature]

Secretary

G:\Montgomery Regional Solid Waste Authority - 003846\General - 028547\Minutes of July 15, 2004 meeting.doc

MINUTES OF MEETING
MONTGOMERY REGIONAL SOLID WASTE AUTHORITY
March 18, 2010

Chair Lance Terpenny called the meeting to order at 1:30 p.m. in the conference room of the Authority's Recycling Center Building and declared the existence of a quorum. Present were Authority Board members Lance Terpenny, Adele Schirmer, Al Bowman, Michael Coleman and Gary Creed. Also present were Alan Cummins, MRSWA Executive Director, Joe Levine, NRRA Executive Director, April Swanson and Jerry McGraner with Joyce Engineering, Jim Ketterer, MRSWA Director of Recycling, and Kim Stafford, MRSWA Executive Assistant.

The next item on the agenda was the agenda. Ms. Schirmer moved that the agenda be approved as presented. Mr. Creed seconded the motion, which passed unanimously.

The minutes from the February 11, 2010 Board meeting were reviewed. No changes were offered. Mr. Bowman moved that the minutes be approved as presented. Mr. Creed seconded the motion, which passed unanimously.

Under items for consent, the expenses for February were reviewed. Mr. Cummins stated that the Authority expenses were 4.22% below projections. There being no questions, Ms. Schirmer moved that the expenses be approved. Mr. Bowman seconded the motion, which passed unanimously.

The next item on the agenda was the solid waste monthly tonnage report for February. Mr. Cummins reported another rough month for tonnage and attributed the decrease in tonnage to February being a short month and to very bad weather throughout the month. He added, however, that numbers indicate that March was shaping up to be a rebound month.

Discussed next were the baler and shipment reports for February. Mr. Ketterer noted that the recycling department also saw a similar decrease for the month. Baled amounts were only at 325.53 tons and 433.60 tons were shipped. He added that commodity prices are doing well and the residue rate remains low.

Revenues for February were reviewed next. Mr. Cummins stated the revenues were 8.42% above projections. He added that even though the Roanoke recycling agreement had officially ended, recycling was still in the black.

The next item on the agenda was Teresa Sweeney's activities. Mr. Cummins praised Teresa for her participation concerning the Solid Waste Management Plan, the Storm Water Pollution Prevention Plan and the Environmental Excellence Program.

A tonnage and tipping fee history was presented next. Mr. Cummins provided the report so the Board members could have accurate historical information. Ms. Schirmer asked if a recycling tonnage column could be added in the future. Mr. Cummins assured her that it would be provided at the April Board meeting.

Discussed next was the Preliminary 2010-2011 Budget. Mr. Cummins provided the draft budget for review. He said the budget committee met February 23 and went over the budget in

detail. There are no tipping fee increases being proposed. There is a decrease in the fee for loads of source separated fiber and tire fees will be based on a per pound basis, not per tire. He said he used conservative figures, reflecting only a 2% increase in solid waste tonnage, a 12% increase in recycling tonnage, and a 22% increase in recycling commodity prices. Mr. Cummins added that the Authority has agreed to take over the Household Hazardous Waste Day. This includes planning and costs for the event. Ms. Schirmer commended Mr. Cummins on his budget work.

As part of the budget process, the Board reviewed a preliminary rate schedule and discussed setting a public hearing on the rates. Ms. Schirmer moved that the Board adopt the Resolution (attached to and incorporated in these minutes) setting forth a preliminary rate schedule and setting a public hearing on the proposed rates for April 8, 2010 at 1:30 pm. Mr. Bowman seconded the motion, which passed unanimously. The preliminary rate schedule and public hearing date will be advertised.

The next item on the agenda was the 5-Year Business Plan. The Board reviewed the plan prior to the meeting. Mr. Coleman asked what overall impact there is to the solid waste department subsidizing recycling. Mr. Cummins said it is not an issue and the goal is to have the recycling department break even. Ms. Schirmer added that the Authority is making recycling more attractive so the public will not throw away as much. This is done by tipping fees being higher than recycling fees. The Board commended Mr. Cummins on his work developing the plan.

Discussed next was the Solid Waste Management Plan (SWMP). At this time, Mr. Cummins introduced April Swanson and Jerry McGraner from Joyce Engineering. Ms. Swanson stated that the Department of Environmental Quality (DEQ) requires the plan to be updated every five years. She said they met with all member jurisdictions for input as well as getting input from Mr. Cummins, Ms. Sweeney, and Mr. Ketterer. The Board was pleased with the plan and recommended no changes. Mr. Creed moved that the resolution (attached to and incorporated in these minutes) adopting the plan be approved. Ms. Schirmer seconded the motion, which passed unanimously.

The next item on the agenda was the Gas to Energy Project. Mr. Cummins reported that GkW had confronted an issue concerning a permit for the interconnector. This issue has been resolved and the project is moving forward. The project is expected to be ready in June and Steve Cox of GkW Energy will be attending the April Board meeting.

The NRRA Report was discussed next. Mr. Levine reported that their Authority is holding a Household Hazardous Waste Day on April 17 at Pulaski County High School. He said they are working on plans to become a member of the Climate Action Reserve (CAR). Mr. Levine added that NRRA will have a presentation soon recognizing them for achieving an E3 status in the Environmental Excellence Program.

Public comments were the next agenda item. There were no public comments.

The next item on the agenda was a Closed Meeting. On motion of Ms. Schirmer, seconded by Mr. Creed, the Board unanimously approved going into Closed Meeting to discuss

Personnel Matters - (pursuant to Virginia Code §2.2-3711 A.1) - discussion of assignment, appointment, promotion, performance, demotion, discipline, salaries, compensation or resignation of specific public officers, appointees or employees of any public body.

The Board then went into Closed Meeting. Mr. Terpenny, Mr. Bowman, Mr. Creed, Mr. Coleman, and Ms. Schirmer were present for the closed meeting. At the end of the Closed Meeting, the Chairman declared that the Board had returned to Open Meeting, and all Board members present (Mr. Terpenny, Mr. Bowman, Mr. Creed, Ms. Schirmer and Mr. Coleman) each individually approved the following certification resolution:

WHEREAS, the Board of the Montgomery Regional Solid Waste Authority convened a closed meeting on this date pursuant to an affirmative recorded vote and in accordance with the provisions of the Virginia Freedom of Information Act; and

WHEREAS, Section 2.2-3712 of the Code of Virginia requires a certification by the Board of the Montgomery Regional Solid Waste Authority that such closed meeting was conducted in conformity with Virginia law;

NOW, THEREFORE, BE IT RESOLVED, that the Board of the Montgomery Regional Solid Waste Authority hereby certifies that, to the best of each member's knowledge, (1) only public business matters lawfully exempted from open meeting requirements under the Virginia Freedom of Information Act were heard, discussed or considered in the closed meeting to which this certification applies; and (2) only such public business matters as were identified in the motion by which the closed meeting was convened were heard, discussed or considered in the meeting to which this certification applies.

Ms. Schirmer moved that Mr. Cummins receive a 5.5% raise effective on his anniversary date. Mr. Creed seconded the motion, which passed unanimously.

Board members unanimously agreed that the next regular monthly meeting of the Authority Board would occur on April 8, 2010 at 1:30 pm at the Authority's Recycling Center Building conference room. There being no further business, the meeting was adjourned.

Accepted:

R. Lane Terpenny
Chairman

4/14/10
Date

Gary D. Creed
Secretary

APPENDIX V

Board Resolutions

MONTGOMERY REGIONAL SOLID WASTE AUTHORITY

RESOLUTION OF THE MONTGOMERY REGIONAL SOLID WASTE AUTHORITY

BE IT RESOLVED, that the Board of the Montgomery Regional Solid Waste Authority, an Authority created in accordance with the Virginia Water and Waste Authorities Act, by a unanimous vote at its July 15, 2004 meeting adopted the Regional Solid Waste Management Plan dated June 23, 2004.

J.V. Formon Jr.
Chairman, Board of Directors
of Montgomery Regional Solid
Waste Authority

ATTEST:

Secretary

MONTGOMERY REGIONAL SOLID WASTE AUTHORITY

RESOLUTION OF THE MONTGOMERY REGIONAL SOLID WASTE AUTHORITY

BE IT RESOLVED, that the Board of the Montgomery Regional Solid Waste Authority, an Authority created in accordance with the Virginia Water and Waste Authorities Act, by a unanimous vote at its March 18, 2010 meeting adopted the Regional Solid Waste Management Plan dated March 3, 2010.

R. Lance Terpening
Chair, Board of Directors of
Montgomery Regional Solid
Waste Authority

ATTEST:

Mary D. Creed
Secretary